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Hitachi Business Continuity Manager

9.8

Reference Guide

Hitachi Business Continuity Manager makes it possible to reliably perform backup operations in large-scale configurations by taking advantage of storage system copy functions. This guide describes how to use ISPF panels, CLI commands, data objects, and BCM Monitor parameter files for Hitachi Business Continuity Manager Basic and Hitachi Business Continuity Manager UR 4x4 Extended CTG.

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Contents

Preface

This manual is a reference guide to the following program products:

- Hitachi Business Continuity Manager Basic

- Hitachi Business Continuity Manager UR 4x4 Extended CTG

In this manual, these products are collectively referred to as Business Continuity Manager.

This preface includes the following information:

Intended audience

This document is intended for people who:

- Users who want to know more about how to use the Business Continuity Manager ISPF panels, CLI commands, data objects, and BCM Monitor parameter files.

Readers of this document should have a basic knowledge of:

- Functions of VSP G1000, VSP G1500, VSP F1500, VSP 5000 series storage systems.

Product version

This document revision applies to Hitachi Business Continuity Manager v9.8 or later.

Release notes

Read the release notes before installing and using this product. They may contain requirements or restrictions that are not fully described in this document or updates or corrections to this document. Release notes are available on Hitachi Vantara Support Connect: https://knowledge.hitachivantara.com/Documents.

Document organization

The following table provides an overview of the contents and organization of this document. Click the chapter title in the left column to go to that chapter. The first page of each chapter provides links to the sections in that chapter.

Chapter/Appendix	Description
Chapter 1, ISPF panels on page 1-1	This chapter explains how to move between ISPF panels and perform operations on them, and explains the nature and function of displayed items.
Chapter 2, CLI commands on page 2-1	This chapter describes the functions of the commands available in the command line interface for Business Continuity Manager.
Chapter 3, Data objects on page 3-1	This chapter describes the configuration file dataset formats and required disk capacity, the XML document type definitions, and REXX variable structures.
Chapter 4, CSV files used by the copy group definition file generation function on page 4-1	This chapter describes the CSV files used by the copy group definition file generation function.

Chapter/Appendix	Description
Chapter 5, BCM Monitor parameter files on page 5-1	This chapter provides an overview of the BCM Monitor parameter files and describes their formats.
Chapter 6, YKBTSCAN (scanning the volumes as a batch job) on page 6-1	This chapter describes how to scan the volumes as a batch job by using `YKBTSCAN`.
Appendix A, Sample scripts on page A-1	This appendix describes sample scripts for CLI commands.
Appendix B, Method for assigning dummy device numbers by using YKBTSCAN on page B-1	This appendix describes how to assign dummy device numbers by using `YKBTSCAN`.
Appendix C, Example of the scan results of PPRC copy pairs on page C-1	This appendix provides an example of the scan results of PPRC copy pairs.
Appendix D, Conventions in syntax explanations on page D-1	This appendix describes the conventions in syntax explanations and the syntax elements that are used.

Related documents

The following Hitachi referenced documents are also available for download from the Hitachi Vantara Support Connect: https://knowledge.hitachivantara.com/Documents.

- *Hitachi Storage Management Software for Mainframe Messages*, MK-92HC227
- *Hitachi Business Continuity Manager User Guide*, MK-94RD247
- *Hitachi Business Continuity Manager Installation Guide*, MK-95HC104
- *Hitachi Tiered Storage Manager for Mainframe User Guide*, MK-92HC207
- *System Requirements*, MK-92HC209
- *Mainframe Analytics Recorder User Guide*, MK-92HC226
- *Hitachi Replication Manager Configuration Guide*, MK-98HC151
- *Hitachi Replication Manager User Guide*, MK-99HC166
- *Command Control Interface User and Reference Guide*, MK-90RD7010
- *System Administrator Guide*, MK-92RD8016
- *Hitachi TrueCopy for Mainframe User Guide*, MK-92RD8018
- *Hitachi ShadowImage for Mainframe User Guide*, MK-92RD8020
- *Hitachi Universal Replicator for Mainframe User Guide*, MK-92RD8022
- *Hitachi Universal Volume Manager User Guide*, MK-92RD8024

Document conventions

This document uses the following typographic conventions:

Convention	Description
Bold	• Indicates text in a window, including window titles, menus, menu options, buttons, fields, and labels. Example: Click **OK**. • Indicates a emphasized words in list items.
Italic	• Indicates a document title or emphasized words in text. • Indicates a variable, which is a placeholder for actual text provided by the user or for output by the system. Example: `pairdisplay -g` *`group`*
`Monospace`	Indicates text that is displayed on screen or entered by the user. Example: `pairdisplay -g oradb`
[ ] square brackets	Indicates optional values. Example: [a | b] indicates that you can choose a, b, or nothing.
{ } braces	Indicates required or expected values. Example: { a | b } indicates that you must choose either a or b.
| vertical bar	Indicates that you have a choice between two or more options or arguments. Examples: [a | b] indicates that you can choose a, b, or nothing. { a | b } indicates that you must choose either a or b.

This document uses the following icons to draw attention to information:

Icon	Label	Description
	Note	Calls attention to important or additional information.
	Tip	Provides helpful information, guidelines, or suggestions for performing tasks more effectively.
	Caution	Warns the user of adverse conditions and/or consequences (for example, disruptive operations, data loss, or a system crash).
	WARNING	Warns the user of a hazardous situation which, if not avoided, could result in death or serious injury.

Conventions for storage capacity values

Physical storage capacity values (for example, disk drive capacity) are calculated based on the following values:

Physical capacity unit	Value
1 kilobyte (KB)	1,000 (10^3) bytes
1 megabyte (MB)	1,000 KB or $1{,}000^2$ bytes
1 gigabyte (GB)	1,000 MB or $1{,}000^3$ bytes
1 terabyte (TB)	1,000 GB or $1{,}000^4$ bytes
1 petabyte (PB)	1,000 TB or $1{,}000^5$ bytes
1 exabyte (EB)	1,000 PB or $1{,}000^6$ bytes

Logical capacity values (for example, logical device capacity, cache memory capacity) are calculated based on the following values:

Logical capacity unit	Value
1 block	512 bytes
1 cylinder	Mainframe: 870 KB Open-systems: • OPEN-V: 960 KB • Others: 720 KB
1 KB	1,024 (2^{10}) bytes
1 MB	1,024 KB or $1{,}024^2$ bytes
1 GB	1,024 MB or $1{,}024^3$ bytes
1 TB	1,024 GB or $1{,}024^4$ bytes
1 PB	1,024 TB or $1{,}024^5$ bytes
1 EB	1,024 PB or $1{,}024^6$ bytes

Accessing product documentation

Product documentation is available on Hitachi Vantara Support Connect: https://knowledge.hitachivantara.com/Documents. Check this site for the most current documentation, including important updates that may have been made after the release of the product.

Getting help

Hitachi Vantara Support Connect is the destination for technical support of products and solutions sold by Hitachi Vantara. To contact technical support, log on to Hitachi Vantara Support Connect for contact information: https://support.hitachivantara.com/en_us/contact-us.html.

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prospects. It is the destination to get answers, discover insights, and make connections. **Join the conversation today!** Go to community.hitachivantara.com, register, and complete your profile.

Comments

Please send us your comments on this document: doc.comments@hitachivantara.com. Include the document title and number, including the revision level (for example, -07), and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Vantara LLC.

Thank you!

1

ISPF panels

This chapter explains how to move between ISPF panels and perform operations on them, and explains the nature and function of displayed items.

Overview of ISPF panels

The Business Continuity Manager panel interface is comprised of ISPF panels. You can use ISPF panels to operate Business Continuity Manager and manipulate copy groups. This section describes the Business Continuity Manager panel system and panel transitions, and gives an overview of ISPF panels. Note that the explanations in this section assume the default values for the PF key numbers.

ISPF panel system

The structure of the operation panels starting from the Main Menu is shown in Figure 1-1 and Figure 1-2.

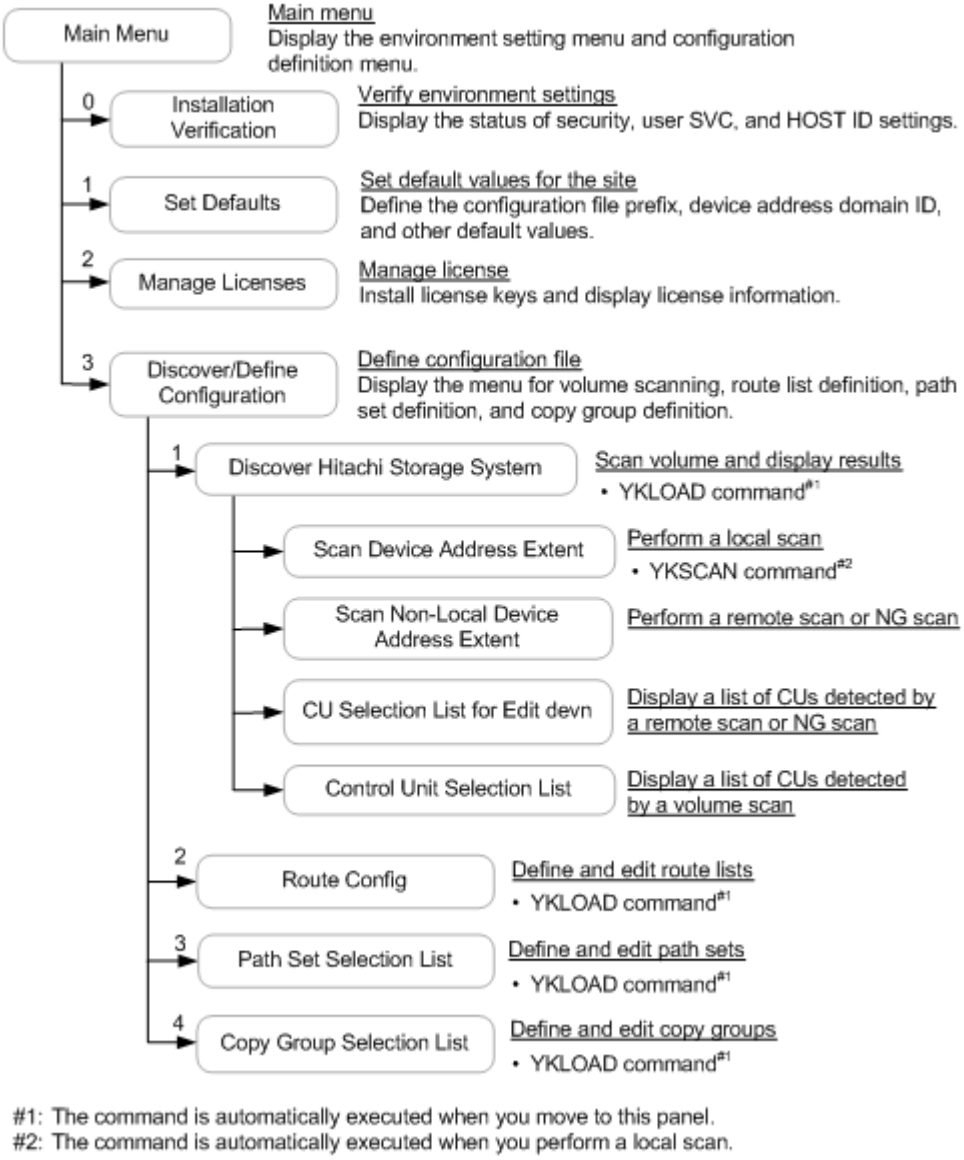

Figure 1-1 The ISPF panel system (1 of 2)

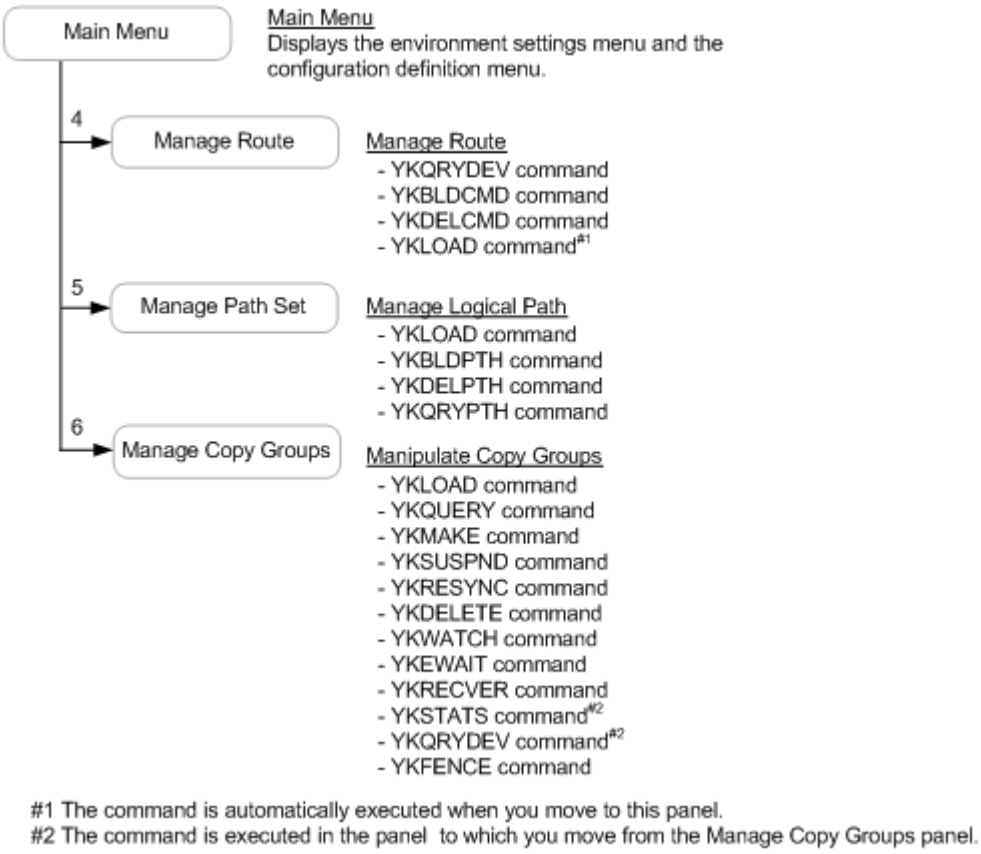

Figure 1-2 The ISPF panel system (2 of 2)

Operating procedures for the ISPF panel

The information to be entered does not have restrictions on the case and type of characters.

The maximum length of the entered characters is up to the length of the input fields, and a validation check takes place after input.

After entering the data, confirm the entry by pressing the **Enter** key.

Note: During execution of Business Continuity Manager, you must not perform ISPF operations that involve execution of the following commands:

- `YKSTART` command
- Scripts that execute Business Continuity Manager

Function keys

Functions for function keys, which are common among panels, are described below. Available function keys for the current panel are displayed at the bottom of the panel. For function keys available within specific panels, see the explanations for each panel.

F1=Help: Displays Help information for the panel.

F3=Exit: Terminates ISPF or returns to the previous panel.

F4=Refresh: Refreshes the display.

F6=Sort: Sorts the displayed information according to the specified conditions.

F7=Backward: Scrolls up the display.

F8=Forward: Scrolls down the display.

F12=Cancel: Cancels the process.

F17=DispConf: Displays the settings information.

Panel scrolling

If there are more rows than can be displayed at once within the panel, the **F7=Backward** and **F8=Forward** keys can be used to scroll the screen. The last row of table data is marked **Bottom of data**.

In panels that display lists, you can use the Scroll line to specify the amount that will be scrolled.

Commands that can be used in the ISPF panels

This subsection explains the commands that can be used on the **Command** line in the ISPF panels.

LOCATE command

Function

The `LOCATE` command searches, from the values of the sorted items in a list, for a value that matches the specified search string. If a value that matches the specified string is found, that value is scrolled to the top of the list (below the header line). If the value is not found, the value immediately before the specified string is scrolled to the top of the list (below the header line).

Format

`{LOCATE|LOC|L}`Δ_1 *`search-character-string`*

Note: If the list is sorted by an item other than the one you want to search for, sort the list by the item you want to search for, and then execute the `LOCATE` command.

SELECT command

Function

Actions are set to **AC** in a panel that displays list items in accordance with the conditions specified by the `SELECT` command.

The `SELECT` command selects the rows that match the condition, and performs the action on them. The command selects these rows not from

only that portion of list items displayed in the panel, but from the entire list.

Format

`{SELECT|SEL|S}`Δ_1`[`*field-name*`]`Δ_1*pattern*Δ_1*action-name*

Parameter

Parameter		Explanation
field-name		Specifies the name of a field in which a condition is specified. For details about the field names that can be specified, see the explanation for the applicable panel. If *field-name* is omitted, the default field established for the applicable panel is assumed.
pattern	Character string	Specifies either of the following values: • Value of a field • Part of a field value with the inclusion of an asterisk (`*`) The asterisk (`*`) represents any character string of zero or more characters. An asterisk (`*`) can be specified at the beginning or end of a character string, as indicated below: *character-string*`*` `*`*character-string* However, in the **DEVICE** field, you cannot specify an asterisk for the serial number of a storage system. To specify a field value that contains spaces or commas (`,`), enclose the specified field value in single quotation marks (`'`). If no value is specified in the **VOLSER** or **LABEL** field, specify a space.
	Asterisk (`*`)	Used to select all rows in a list. You cannot specify an asterisk in the **DEVICE** field.
	`'`*value-1*`':'`*value-2*`'`	Specifies a range of field values. This pattern can be used only for the **DEVN**, **PDEVN**, **SDEVN**, **VOLSER**, or **DEVICE** fields. (**VOLSER** and the serial numbers of the storage systems in **DEVICE** are in EBCDIC code order.) Specify such that *value-1* $\leq$ *value-2*, and enclose the values in single quotation marks (`'`).
action-name		Specifies one of the available actions. A space can be specified for *action-name*. If a space is specified, the previously specified action is cancelled.

Examples

- To display the status of copy groups that begin with `TCGRP` (the default field name, `CGID`, can be omitted) in the Manage Copy Groups panel, enter the following command:

```
S△CGID△TCGRP*△Q
```

- To load copy groups for which `NOT LOADED` is set to **Status** in the Manage Copy Groups panel, enter the following command:

```
S△STATUS△'NOT LOADED'△L
```

- To select the volume for which `VSN111` is set to **Volser** in the Pair Selection List (Primary) panel, enter the following command:

```
S△VOLSER△VSN111△S
```

- To select the volume for which `F310` is set to **Devn** (the default field name, `DEVN`, can be omitted) in the Pair Selection List (Primary) panel, enter the following command:

```
S△DEVN△F310△S
```

- To select the volumes for which `F310` through `F320` are set to **Devn** (the default field name, `DEVN`, can be omitted) in the Pair Selection List (Primary) panel, enter the following command:

```
S△DEVN△'F310':'F320'△S
```

- To select the volume for which `10037` is set for **SN**, `20` is set for **CU**, and a value in the range from `00` to `10` is set for **CCA** in the Pair Selection List (Secondary) panel, enter the following command:

```
S△DEVICE△'100372000':'100372010'△S
```

- To register a command device without specifying a value for **Label** (leaving **Label** blank) for the storage system, enter the following command in the Route Status panel:

```
S△LABEL△'△'△B
```

Note: If you specify three parameters, the command interpreter assumes that the field name is specified. If you specify two parameters, the command interpreter assumes that the field name is omitted.

SORT command

Function

List items, displayed in a panel, are sorted by the `SORT` command based on the specified field names. The sort order (ascending or descending) is defined for each selected field.

Format

`SORT` Δ_1 [*field-name*]

Parameter

field-name

For details about the specifiable field names and sort order, see the descriptions for each panel. If you omit the field name, a pop-up panel will appear and you can specify the sort key.

Note: If you specify a field name, you cannot sort on multiple items. If you specify an invalid field name, a pop-up panel for specifying the sort key is displayed.

SCANPAIR command

Function

The `SCANPAIR` command displays the Scan Copy Pair Storage System panel that scans volumes of PPRC copy pairs.

Format

`SCANPAIR`

ERRCODE command

Function

The `ERRCODE` command displays the Error Code Help panel. If you enter an error code on this panel, you can view the details for that error code. For details about the Error Code Help panel, see Error Code Help panel on page 1-12.

On the Exception Message Panel, if you place the cursor on an error code that is within the displayed message, and execute the `ERRCODE` command, the details for that error code are displayed in the Error Code Help Panel. For details on the Exception Message Panel, see Exception Message panel on page 1-10.

Format

`ERRCODE`

Commands that can be used on the command line

Table 1-1 lists, in alphabetical order by panel name, the commands that can be used on the command line.

Table 1-1 Commands that can be used on the command line

Panel name	Command name				
	LOCATE	SELECT	SORT	SCANPAIR	ERRCODE
Browse Copy Group Pair Detail	Y	--	Y#1	--	Y
Copy Group Detail Definition	--	--	Y#1	--	Y
Copy Group Pair Detail	Y	--	Y#1	--	Y
Copy Group Pair Fence Status	Y	--	Y	--	Y
Copy Group Pair Status	Y	Y	Y	--	Y
Copy Group Selection List	--	--	--	Y	Y
Define Command Device	Y	Y	Y	--	Y
Error Code Help	--	--	--	--	--
Exception Message Panel	--	--	--	--	Y#2
Manage Copy Groups	Y	Y	Y	--	Y
Pair Selection List (Primary)	--	Y	--	--	Y
Pair Selection List (Secondary)	--	Y	Y	--	Y
Path Set Detail	--	--	Y#1	--	Y
Path Set Status	--	--	Y#1	--	Y
Path Set Status of Copy Group Pair	--	--	Y#1	--	Y
Route Status	--	Y	--	--	Y
Setting Information	--	--	--	--	--
UR Copy Group Performance Statistics	Y	--	Y	--	Y
Others	--	--	--	--	Y

Legend:

Y: Can be used.

--: Cannot be used.

#1: This command can be used, but you cannot specify field names.

#2: Pressing the **F5=ErrCode** key will also execute the command.

Common displays among panels

This section describes the common displays among panels.

Panel Help information

A Help information pop-up for each panel is displayed when the cursor is positioned on each panel field and the **F1=Help** key is pressed.

The following figure shows an example of the Help panel.

```
                            Manage Copy Groups

This panel allows you to perform management operations on existing Copy
Groups. It includes all of the Copy Groups which have been defined using
the PREFIX value that you have supplied in the Set Defaults panel.

To perform one of the supported management actions, type the action name
into the 'AC' field of the line showing the Copy Group that you wish to
act on.

The F6=Sort Key requests a pop-up window which can be used to sort the
copy groups table in several ways.

Press F10=PrevInfo to display previous information.

Press F11=NextInfo to display next information.

Press F17=DispConf to view the values set in Set Defaults panel from
Setting Information pop-up.

 F1=Help        F2=Split       F3=Exit        F4=Resize      F5=Exhelp
 F6=Keyshelp    F7=PrvTopic    F8=NxtTopic    F9=Swap       F10=PrvPage
```

Setting Information panel

A Setting Information panel is displayed when the **F17=DispConf** key is pressed in each panel.

```
                         Setting Information
Command ===> ____________________________________________________

Hitachi Business Continuity Manager

Configuration File Prefix  . . . : BCM
Local Device Address Domain ID . : DADP
ISPF Log Max . . . . . . . . . . : 0
Remote DKC Function  . . . . . . : N
Preset RouteListID . . . . . . . :
Preset Route Label . . . . . . . :
All Commands via CDEV Function . : N
                                            Version v.r.n-mm (xx)

 F1=Help       F7=Backward   F8=Forward   F12=Cancel
```

The following table lists and describes the items in the Setting Information panel.

Item	Description
Configuration File Prefix	Prefix of the configuration file
Local Device Address Domain ID	The device address domain ID of the host on which Business Continuity Manager is running (the local DADID)
ISPF Log Max	The maximum number of messages (Message structures) that are output to the ISPF log when a command is executed
Remote DKC Function	Displays whether the Remote DKC Control function is applied: • `Y`: The Remote DKC Control function is being used. • `N`: The Remote DKC Control function is not being used.
Preset RouteListID	Current route list ID
Preset Route Label	Current route label
All Commands via CDEV Function	The method for issuing commands to Gen'ed volumes: • `Y`: The commands are issued via a command device. • `N`: The commands are not issued via a command device.

Exception Message panel

Error messages for various operations are displayed in the Exception Message panel.

```
                          Exception Message Panel            Row 1 to 3 of 3
Command ===> ____________________________________________ Scroll ===> PAGE

                                                        2008/03/11 19:50:57
Status query for UR encountered errors. RC = 32
Message
     Sev  Related Information
YKQ026W Primary volume is offline. DEVN 7381(000000014002,01,21)

     8    1,2
YKZ257E DASD device 733F(FF21) management error. (Message type: 0F Reason
        code: E3 Error code: 6A13 BF42, cmd=3, pos=HCIOE022)
     32   1,2
YKZ257E DASD device 733F(FF21) management error. (Message type: 0F Reason
        code: E3 Error code: 6A13 BF42, cmd=3, pos=HCIOE022)
     32   1,1
***************************** Bottom of data ******************************

 F1=Help        F5=ErrCode     F7=Backward    F8=Forward    F12=Cancel
```

The following table lists and describes the items in the Exception Message panel.

Item	Description
Message	Message ID and message text output to the `Text` in the message structure
Sev	Severity output to the `Severity` in the message structure
Related Information	Additional information output to the `Value` in the message structure

Pressing the **Enter** key closes the displayed Exception Message Panel. If there are multiple messages, they can all be viewed by scrolling the panel. Each operation and the messages output for that operation are stored in the ISPF log. In a single message, a maximum of 2 lines are displayed, and any lines that follow it are not displayed. The third line and those below it are checked by using the ISPF log.

If you place the cursor on an error code that is within the displayed message and either press the **F5=ErrCode** key or execute the `ERRCODE` command, details for that error code are displayed in the Error Code Help panel. For details on the Error Code Help panel, see Error Code Help panel on page 1-12. If an error code is split and spans two rows, details for the error code cannot be displayed, even if you place the cursor on the error code.

In the following example, details for the error code `6A13` are displayed in the Error Code Help panel:

When the cursor is placed on the error code:

```
YKZ257E DASD device 733F(FF21) management error. (Message type: 0F Reason
        code: E3 Error code: 6A13 BF42, cmd=3, pos=HCIOE022)
```

If the cursor is located on a space and you either press the **F5=ErrCode** key or execute the `ERRCODE` command, the first 40 characters before the cursor are searched. The next action depends on the results of this search:

- If an error code is present, the details for that error code are displayed in the Error Code Help panel.
- If no error code is present, the first 40 characters that follow the cursor are searched.
- If there is no error code either before or after the cursor, no error code details are displayed.

In the following example, the details for the error code `6A13` are displayed in the Error Code Help panel:

When the cursor is located on a space:

```
YKZ257E DASD device 733F(FF21) management error. (Message type: 0F Reason
        code: E3 Error code: 6A13_BF42, cmd=3, pos=HCIOE022)
```

Error Code Help panel

Executing the `ERRCODE` command causes the Error Code Help panel to be displayed. If you enter an error code on this panel, you can view the details for that error code.

For details about the `ERRCODE` command, see ERRCODE command on page 1-7.

In the Exception Message Panel, if you place the cursor on an error code that is within the displayed message and either press the **F5=ErrCode** key or execute the `ERRCODE` command, the details for that error code are displayed in the Error Code Help Panel. For details on the Exception Message Panel, see Exception Message panel on page 1-10. If the error information is displayed across multiple lines, scroll the panel to view the entire message.

```
           Error Code H Row 1 to 8 of 8
Command ===> ________ Scroll ===> PAGE

Error code . . 6A13
Error details:
   The command could not be executed
   because a remote command was
   executed while the command device
   was not defined.

Type of error:
   Others.
*********** Bottom of data ************




 F1=Help      F7=Backward  F8=Forward
F10=PrvsErr  F11=NextErr  F12=Cancel
```

The following table lists and describes the items in the Error Code Help panel.

Item	Description
Error code	For specifying or displaying an error code and the details.
Error details	Displays the error code details.
Type of error	Displays one of the following as the cause of the error: • `SI` • `TC` • `UR` • `CMD`: Command device • `PATH`: Logical path • `Others`: Other

Pressing the **F12=Cancel** key removes the displayed information from the screen.

Pressing the **F10=PrvsErr** key displays the error code that is immediately before the current error code according to the list of error codes in the *Hitachi*

Storage Management Software for Mainframe Messages. If the first error code in the list of error codes is currently displayed, the last error code in the list is displayed.

Pressing the **F11=NextErr** key displays the error code that is immediately after the current error code according to the list of error codes in the *Hitachi Storage Management Software for Mainframe Messages*. If the last error code in the list of error codes is currently displayed, the first error code in the list is displayed.

Notes common to all panels

The following notes are common to all panels:

- Lower-case letters might not be displayed correctly, depending on the local environment.

Main Menu panel (environment settings and configuration definitions)

This section describes how to display the Main Menu panel, the transitions from the Main Menu panel, and the display items.

Displaying the Main Menu panel

To display the Main Menu panel:

1. Select **6 Command** from the ISPF menu.
2. Enter `YKSTART`.

In some cases, the following panels might be displayed instead of the Main Menu panel:

Installation Verification Summary panel

If any of the following conditions are met, the system assumes that the installation of Business Continuity Manager did not complete and the Installation Verification Summary panel is displayed:

- No profile for referencing or operations has been specified for the RACF security setting.

- No user SVC has been registered.

- A user SVC version is enabled that cannot be used with the version of Business Continuity Manager being installed.

- An invalid value is set for a host ID.

For details on the Installation Verification Summary panel, see Installation Verification Summary panel (environment settings verification) on page 1-17.

Set Defaults panel

If any of the following conditions are met, the Set Defaults panel for entering the prefix and device address domain ID is displayed:

- No values are set for **Configuration File Prefix** and **Local Device Address Domain ID** in the Set Defaults panel.

- The prefix that was used the last time Business Continuity Manager was running is specified for an instance of Business Continuity Manager agent with `LOCK(PREFIX)`. If this occurs, an attempt is made to start the same instance of Business Continuity Manager as before while the instance of Business Continuity Manager agent is still running.

If the configuration file is locked by the Business Continuity Manager agent, you will be able to start an instance of Business Continuity Manager by entering the prefix of an unlocked configuration file in the displayed Set Defaults panel. If you press the **F12=Cancel** key without entering a prefix, Business Continuity Manager will end.

For details on the Set Defaults panel, see Set Defaults panel (default settings for the site) on page 1-22.

Panel transitions from the Main Menu

The following figure shows the panel transitions starting from the Main Menu.

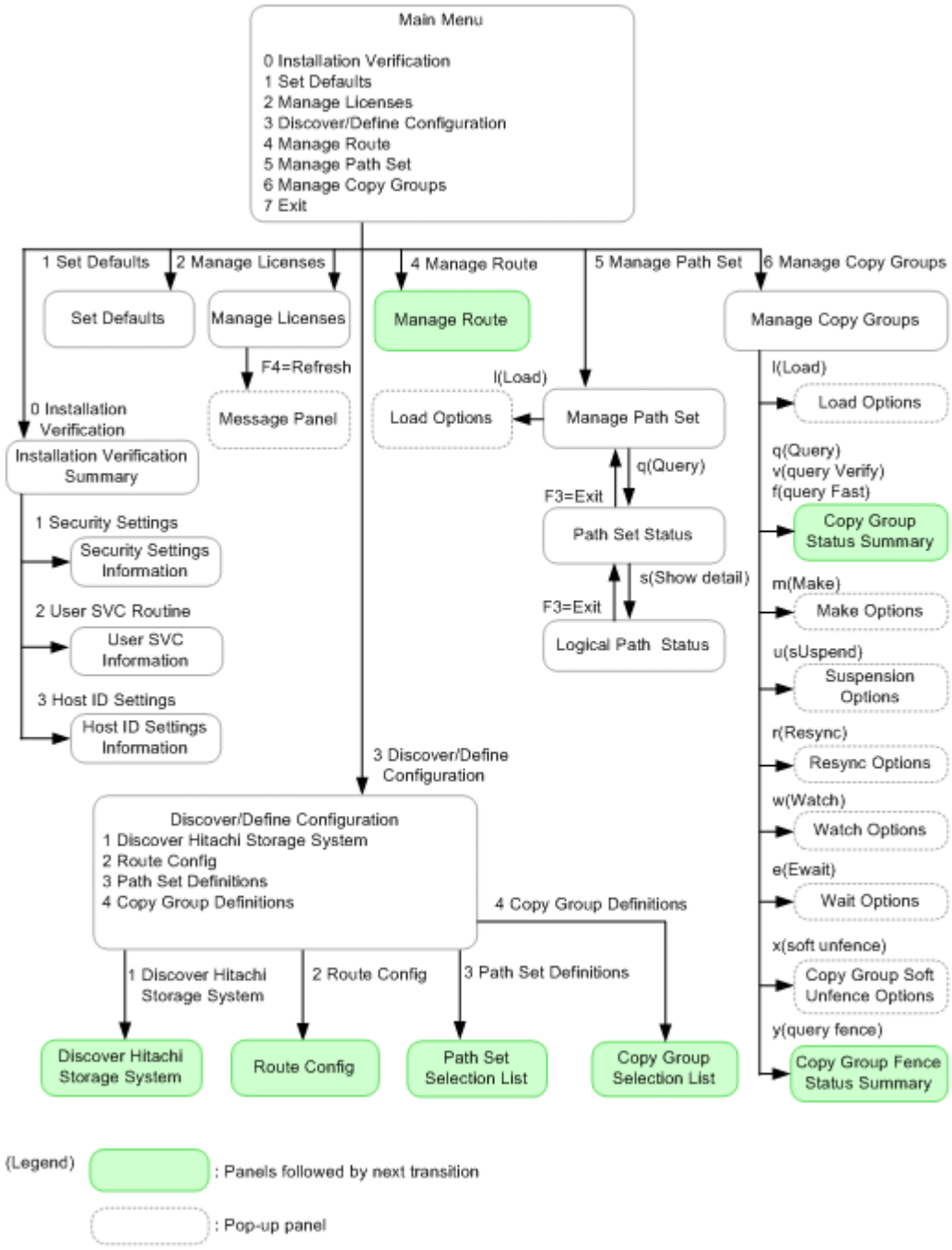

Figure 1-3 Panel transitions from the Main Menu

For details about panels to which transitions can continue, see the location indicated in the following table:

Panel before the transition	Reference
Copy Group Fence Status Summary panel	Panel transitions from the Copy Group Fence Status Summary panel on page 1-165

Panel before the transition	Reference
Copy Group Selection List panel	Panel transition from the Copy Group Selection List panel on page 1-65
Copy Group Status Summary panel	Panel transitions from the Copy Group Status Summary panel on page 1-121
Discover Hitachi Storage System panel	Panel transition from the Discover Hitachi Storage System panel on page 1-28
Manage Route panel	Panel transitions from the Manage Route panel on page 1-99
Path Set Selection List panel	Panel transitions from the Path Set Selection List panel on page 1-54
Route Config panel	Panel transitions from the Route Config panel on page 1-41

Main Menu panel

The Main Menu panel displays the menu for environment settings and configuration definitions. Specify the number corresponding to the operation to be performed.

```
                                   Main Menu
Option ===> ____________________________________________________________________


Hitachi Business Continuity Manager V.R -------------------------------------
Enter a selection choice

    0 Installation Verification
    1 Set Defaults
    2 Manage Licenses
    3 Discover/Define Configuration
    4 Manage Route
    5 Manage Path Set
    6 Manage Copy Groups
    7 Exit



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                                                   Version v.r.n-mm


 F1=Help   F3=Exit
```

The following table lists the items in the main menu and their descriptions.

Item	Description
0 Installation Verification	Verifies the environment settings.
1 Set Defaults	Sets the default of a site.
2 Manage Licenses	Manages license information.

Item	Description
3 Discover/Define Configuration	Scans volumes and defines the configuration file.
4 Manage Route	Manages routes.
5 Manage Path Set	Manages logical paths.
6 Manage Copy Groups	Operates a copy group.
7 Exit	Terminates the panel.
Version	Version of Business Continuity Manager

When the PF keys are not displayed in the Main Menu panel or the Set Defaults panel (default settings for the site) on page 1-22, you can display the PF keys by entering the `PFSHOW ON` command.

Installation Verification Summary panel (environment settings verification)

The Installation Verification Summary panel displays either `OK` or `FAULTY` for the verification results of the security, user SVC, and host ID settings.

```
                         Installation Verification Summary
 Option
===> ____________________________________________________________________


 For more details on an item, enter the corresponding number.
   1 Security Settings  . . . . . . . . : OK
   2 User SVC Routine . . . . . . . . . : FAULTY
   3 Host ID Settings . . . . . . . . . : OK





  F1=Help   F3=Exit
```

The following table lists and describes the items in the Installation Verification Summary panel. Specify the item number that corresponds to the operation to be performed.

Item	Description
1 Security Settings	Status of the RACF security setting • `OK`: A profile for referencing or operations has been specified. • `FAULTY`: No profile for referencing or operations has been specified.
2 User SVC Routine	Status of the user SVC setting • `OK`: A user SVC is enabled whose version can be used with the Business Continuity Manager instance that is running.

Item	Description
	• FAULTY: No user SVCs are registered, or a user SVC is enabled whose version cannot be used with the Business Continuity Manager instance that is running.
3 Host ID Settings	Status of the host ID settings • OK: A host ID that can be used in Business Continuity Manager is enabled in the system. • FAULTY: A host ID that cannot be used in Business Continuity Manager is enabled in the system.

Security Settings Information panel

The Security Settings Information panel displays the current RACF profile setting information.

```
                        Security Settings Information         Row 1 to 18 of 18
 Command ===> ____________________________________________ Scroll ===> PAGE

                                                            2013/01/21 15:15:15
 Facility Class Profiles Query  . .:  STGADMIN.YKA.BCM.YKQUERY
 Facility Class Profiles Commands  :  STGADMIN.YKA.BCM.COMMANDS

 Directions
   The current setup is listed above.
  An unregistered profile is listed as N/A.
   The RACF settings are necessary in order to use CLI commands.
  After a profile is defined in the RACF FACILITY class, a user can use
  CLI commands by being given the access rights of the profile.
   There are the following two kinds of profiles:
    - Facility Class Profiles Query
    - Facility Class Profiles Commands
   To give a user the permissions necessary to use all of the BCM commands:
    1. Make the RACF FACILITY class active.
    2. Define the STGADMIN.YKA.BCM.COMMANDS profile in the FACILITY class.
    3. Give the user the access rights of the profile.
   To give a user the permissions necessary to use some of the BCM commands
   (the reference commands):
    4. Make the RACF FACILITY class active.
    5. Define the STGADMIN.YKA.BCM.YKQUERY profile in the FACILITY class.
    6. Give the user the access rights of the profile.
****************************** Bottom of data ******************************

  F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Security Settings Information panel.

Item	Description
Facility Class Profiles Query	Names of the profiles for referencing that are currently registered If no profiles for referencing are registered, N/A is displayed.
Facility Class Profiles Commands	Names of the profiles for operations that are currently registered If no profiles for operations are registered, N/A is displayed.

User SVC Information panel

The User SVC Information panel displays the user SVC setting information.

```
                              User SVC Information            Row 1 to 31 of 35
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                            2009/07/21 15:15:15

  Version of User SVC for this program  . . . . . . : v.r.m-nn(zz) or later
  Current User SVC . . . . . . : SVC Number 255  Version   v.r.m-nn(zz)
  Dynamic registered User SVC  : SVC Number 255  Version   v.r.m-nn(zz)
  Static installed User SVC  . : SVC Number 253  Version   v.r.m-nn(zz)


 Directions
   The current users SVC routine registration number and version are listed
  above.
  User SVC numbers and versions that have not been acquired are listed as
  N/A.
   If a Dynamic registered User SVC exists, the Dynamic registered User SVC
  will become the Current User SVC.
  If a Dynamic registered User SVC does not exist and a Static installed
  User SVC exists, the Static installed User SVC will become the Current
  User SVC.
  If the Current User SVC is smaller than the Version of User SVC for this
  program, then the program will not run properly.

   If this is the case, use the YKALCSVC command to dynamically register
  the latest User SVC.
   The following is an example of registering a User SVC:
    +-------------------------------------------------------------------+
    : START YKALCSVC                                                    :
    +-------------------------------------------------------------------+

 Note:
   A User SVC registered by using the YKALCSVC command will become invalid
  during a re-IPL.
  As a result, we recommend performing either of the following settings
  in order to prepare for the next re-IPL:
 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

If you press the **F8=Forward** key, the rest of the User SVC Information panel is displayed as follows:

```
                              User SVC Information           Row 32 to 35 of 35
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                            2009/07/21 15:15:17

  Version of User SVC for this program  . . . . . . : v.r.m-nn(zz) or later
  Current User SVC . . . . . . : SVC Number 255  Version   v.r.m-nn(zz)
  Dynamic registered User SVC  : SVC Number 255  Version   v.r.m-nn(zz)
  Static installed User SVC  . : SVC Number 253  Version   v.r.m-nn(zz)


    - Add the YKALCSVC command to the COMMNDxx parmlib member, and then
     have the User SVC automatically re-registered during a re-IPL.
    - Define a User SVC in the IEASVCxx parmlib member, and then use the
     User SVC that was statically installed from the next IPL.
****************************** Bottom of data ******************************

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the User SVC Information panel.

Item		Description
Version of User SVC for this program		The version of the user SVC, which can be used with the Business Continuity Manager instance that is running. If the value output for **Version** across from **Current User SVC** is less than the value output for **Version of User SVC for this program**, a newer version of the user SVC must be registered.
Current User SVC	**SVC Number**	SVC number of the user SVC that is currently enabled in the system. If the user SVC that was registered either dynamically or statically is not found, `N/A` is displayed.
	Version	The version of the user SVC that is currently enabled in the system. If the user SVC that was registered either dynamically or statically is not found, `N/A` is displayed.
Dynamic registered User SVC	**SVC Number**	SVC number of the user SVC that was registered dynamically by the `YKALCSVC` command If no user SVC that was registered dynamically is found, `N/A` is displayed.
	Version	Version of the user SVC that was registered dynamically by the `YKALCSVC` command If no user SVC that was registered dynamically is found, `N/A` is displayed.
Static installed User SVC	**SVC Number**	SVC number of the user SVC that was registered statically based on the `IEASVC`*xx* parmlib member definition If no user SVC that was registered statically is found, `N/A` is displayed.
	Version	Version of the user SVC that was registered statically based on the `IEASVC`*xx* parmlib member definition If no user SVC that was registered statically is found, `N/A` is displayed.

Host ID Settings Information panel

The Host ID Settings Information panel displays the host ID settings.

```
                         Host ID Settings Information
Command ===> ____________________________________________________________

                                                        2013/01/21 19:43:48
Current Host ID  . . . . . . . . . . : 00
Dynamically defined Host ID  . . . . : N/A
Statically defined Host ID . . . . . : 00
                                                                 More:     +
Directions
  The current host ID settings are listed above.
  Host IDs that could not be acquired are listed as N/A.
  When using the remote DKC control functionality, if you want to use
  Business Continuity Manager from multiple hosts (OSs) on the same site
```

```
  to share one command device within one storage system, specify the host
  IDs. If there is only one host (OS) on the site, or you do not want to
  share one command device among multiple hosts, you do not need to
  specify any host IDs.
  For host IDs, specify a unique hexadecimal two-digit number from 00
  through 1F for each OS. In an LPAR environment, specify a different
  number for each LPAR.
  Set host IDs by using the YKSETENV command before starting Business
  Continuity Manager. Alternatively, you can define the corresponding
  system symbols in the IEASYMxx parmlib member and then perform IPL on

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

If you press the **F8=Forward** key, the next part of the Host ID Settings Information panel is displayed as follows:

```
                         Host ID Settings Information
Command ===> ____________________________________________________________

                                                        2013/01/21 19:43:48
Current Host ID  . . . . . . . . . . : 00
Dynamically defined Host ID  . . . . : N/A
Statically defined Host ID . . . . . : 00
                                                              More:   - +
  system symbols in the IEASYMxx parmlib member and then perform IPL on
  the system again to set values for the host ID.
  The examples below show how to specify a host ID. If neither (a) nor (b)
  is specified, 00 is assumed.

  (a) Using the YKSETENV command
      The following example sets the host ID to 0F:
      +----------------------------------------------------------------+
      : START YKSETENV,PARM='YKCMDIF=0F'                               :
      +----------------------------------------------------------------+

  (b) Defining a system symbol in the IEASYMxx parmlib member
      The following example sets the host ID to 0F:
      +----------------------------------------------------------------+
      : SYMDEF(&YKCMDIF='0F')                                          :

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

By pressing the **F8=Forward** key again, the remainder of the Host ID Settings Information panel is displayed as follows:

```
                         Host ID Settings Information
Command ===> ____________________________________________________________

                                                        2013/01/21 19:43:48
Current Host ID  . . . . . . . . . . : 00
Dynamically defined Host ID  . . . . : N/A
Statically defined Host ID . . . . . : 00
                                                              More:   -

      +----------------------------------------------------------------+
      : START YKSETENV,PARM='YKCMDIF=0F'                               :
      +----------------------------------------------------------------+

  (b) Defining a system symbol in the IEASYMxx parmlib member
      The following example sets the host ID to 0F:
      +----------------------------------------------------------------+
      : SYMDEF(&YKCMDIF='0F')                                          :
      +----------------------------------------------------------------+
```

```
Note:
  If you register or change a host ID while Business Continuity Manager is
  running, CLI commands are executed using the previously set value. The
  registered or changed host ID takes effect the next time the YKLOAD
  command is executed (with a route list specified).

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Host ID Settings Information panel.

Item	Description
Current Host ID	The host ID that is currently enabled in the system. • If no host ID was defined by using the `YKSETENV` command or for the `IEASYM`*xx* parmlib member: `00` (default value) is displayed. • If the host ID cannot be acquired: `N/A` is displayed. • If the host ID is invalid because it is not a value from `X'00'` to `X'1F'`: The value is displayed on the panel, and `FAULTY` is displayed for **3 Host ID Settings** on the Installation Verification Summary panel.
Dynamically defined Host ID	The host ID that was defined dynamically by using the `YKSETENV` command. If the host ID cannot be acquired, `N/A` is displayed.
Statically defined Host ID	The host ID that was defined statically for the `IEASYM`*xx* parmlib member. If the host ID cannot be acquired, `N/A` is displayed. Even if the defined host ID is invalid because it is not a value from `X'00'` to `X'1F'`, the value is displayed.

Set Defaults panel (default settings for the site)

In the Set Defaults panel, you can define the prefix for the configuration file, the device address domain ID, and other default settings:

```
                                Set Defaults
Command ===> ____________________________________________________________________

                                                        2015/02/16 16:23:35
Specify Default Settings

                                                                  More:     +
   Configuration File Prefix  . . . . BC______________
   Local Device Address Domain ID . . DADP___________________________
   ISPF Log Max . . . . . . . . . . . 0___
   Remote DKC Function  . . . . . . . N
   Preset RouteListID . . . . . . . . ________
   Preset Route Label . . . . . . . . ________
   All Commands via CDEV Function . . N

Defaults and Options for Configuration File Allocation
   Configuration update:
```

```
   _  1. Inplace
      2. Realloc
   Storage class  . . . . . ________
     Volume serial  . . . . ______
     Device type  . . . . . ________


 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

Press the **F8=Forward** key to display the remaining items in the panel. The Set Defaults panel is displayed as follows when the **F8=Forward** key is pressed.

```
                                  Set Defaults
Command ===> ____________________________________________________________________

                                                          2015/02/16 16:23:35
Specify Default Settings

                                                                   More:   -
   _  1. Inplace
      2. Realloc
   Storage class  . . . . . ________
     Volume serial  . . . . ______
     Device type  . . . . . ________

Defaults and Options for Background Jobs
   SEND Options . . . . . . USER(*)
   Timeout Hours  . . . . . 0
   Timeout Minutes  . . . . 30
   Job Name Prefix  . . . . YUKON18
   JCL JOB Statement:
   //JOBNAME JOB MSGCLASS=H,NOTIFY=YUKON18
   //*
   //*

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Set Defaults panel.

Item	Description
Configuration File Prefix#1	Specify the prefix of the configuration file (required).#2
Local Device Address Domain ID	Specify the device address domain ID of the host on which Business Continuity Manager is running (the local DADID) (required).#2
ISPF Log Max	Specify the maximum number of messages (message structures) output to the ISPF log when a command is executed. A restriction is imposed on the number of messages only if this item is specified. • `0`: No restriction on the number of messages (output all messages) • `10` - `5000`: Up to the specified number of messages can be output.
Remote DKC Function	Specify whether to use the Remote DKC Control function (required). • `Y`: Use the Remote DKC Control function.

Item	Description
	• N: Do not use the Remote DKC Control function. When performing an operation on a path in the Manage Path Set panel, a good practice is to specify Y. When the Remote DKC control function is used, the use of the command device as the I/O destination volume has priority even if the storage system is directly connected to the host.
Preset RouteListID	Specify ROUTE parameter value (the route list ID) for the YKLOAD command.#2 If **Remote DKC Function** is specified as Y and **Preset RouteListID** is not specified, when the YKLOAD command is executed in the Manage Copy Groups panel or Manage Path Set panel, the LOAD Option panel to query the route list ID is displayed.
Preset Route Label	Specify the ROUTE parameter value (the route label) for the YKLOAD command.#3 If a route label is specified, the information about the command devices with the specified route label is loaded. If * is specified, the information about all the command devices is loaded regardless of whether they have a route label. If this item is omitted, the information about the command devices with no route label is loaded.
All Commands via CDEV Function	Specify the method for issuing commands to Gen'ed volumes (required). • Y: Issues the commands to Gen'ed volumes via a command device. If N is specified for **Remote DKC Function**, you cannot specify this value. • N: Directly issues the commands to Gen'ed volumes without sending them via a command device.
Configuration update	Specify the allocation method of the configuration file (default is **1. Inplace**). • **1. Inplace**: Creates the configuration file without creating a temporary file. If a configuration file already exists, the file is overwritten. • **2. Realloc**: Creates a temporary file and then creates the configuration file. If a configuration file already exists, a new file is allocated.
Storage class	Specify this item if you want to assign the configuration file to a specific storage class.#3
Volume serial	Specify the volume serial number if you want to assign the configuration file to a specific volume.#3 Only one volume can be specified. If you specify this item, you cannot specify **Device type**.
Device type	Specify this item if you want to assign the configuration file to a specific device type.#3

Item	Description
	If you specify this item, you cannot specify **Volume serial**.
SEND Options **Timeout Hours** **Timeout Minutes** **Job Name Prefix**	Specify options for the `YKWATCH` command and for the job that outputs the SMS list.
JCL JOB Statement	Specify the JCL of the background job. The specified value is used at the following times: • When `w` is entered in `AC` on the Manage Copy Groups panel and the `YKWATCH` command is executing in the background. • When using the Scan Copy Pair Inside Storage System panel to execute the copy group definition of a PPRC copy pair in the background.

#1:

- If one or more configuration files have already been created by using the Mainframe Agent `YKP2A` command, specify a prefix that is different from that of any configuration file created by using that command for **Configuration File Prefix**. If you specify the same prefix, an error occurs in the Scan Copy Pair Inside Storage System panel or Manage Copy Groups panel.
- If you install and use Business Continuity Manager on the same system as the one where Tiered Storage Manager for Mainframe or MAR is installed, specify a prefix that is different from that of any configuration file created by using Tiered Storage Manager for Mainframe or MAR. If the same prefix is used for Business Continuity Manager, Tiered Storage Manager for Mainframe, and MAR, the products might not work properly.
- If you have already started the Business Continuity Manager agent with `LOCK(PREFIX)` specified, specify a prefix that is different from the one Business Continuity Manager agent uses for **Configuration File Prefix**. If you specify the same prefix, an error occurs.

#2: For details about the characters and maximum length that can be specified, see Names of configuration files on page 3-2.

#3: For details about the specifiable characters and character length, see Table D-2 Syntax elements on page D-3.

Note: When entering a device address domain ID, remember the following:

- Specify the same device address domain ID for volumes that can be directly accessible. Business Continuity Manager assumes that volumes that have the same device address domain ID as the one specified for Set Defaults panel can be directly accessible.
- For ShadowImage (SI), the same device address domain ID must be specified for P-VOL and S-VOL. However, when defining a Non Gen'ed volume and a Gen'ed volume inside the same storage system as a

ShadowImage (SI) copy pair, specify the respective values (the device address domain ID used for an NG scan and the device address domain ID used for a local scan).

Manage Licenses panel (license management)

In the Manage Licenses panel, you can register licenses or display license information.

```
                                Manage Licenses                 Row 1 to 2 of 2
Command ===> ____________________________________________________ Scroll ===> PAGE

                                                        2019/04/16 19:44:14
Enter the license key information below and press ENTER to install.

License Key Dataset Name ____________________________________________________
             or Key Code ____  ____  ____  ____  ____  ____  ____  ____
                         ____  ____  ____  ____  ____  ____  ____  ____
                         ____  ____  ___

License List ------------------------------------------------------------------
PP Name                     Serial Num  Model  Type     Capacity  Expires
Basic                            12345      G  Perm.          10  ----------
UR 4x4 Extended CTG              12345      G  Perm.          10  ----------
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F4=Refresh   F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Manage Licenses panel.

Item	Description
License Key Dataset Name	Specify the dataset name of the license key file that has been transferred to the MVS™.
Key Code	Specify the key code of the license.
PP Name	License name
Serial Num	Storage system serial number
Model	Storage system model code For details about the displayed values, see Help.
Type	License type • `Perm.`: Permanent license. • `Temp.`: Temporary license. • `Emer.`: Emergency license.
Capacity (TB)	Licensed capacity (in TB or `Unlimited`) `Unlimited` indicates unlimited capacity.
Expires	Expiration date of the license

If you enter the dataset name of the license key file that has been transferred to the MVS™ in the **License Key Dataset Name** field, or enter the key code

in the **Key Code** field, and then press the **Enter** key, the license key will be installed.

- If you entered the value in the **License Key Dataset Name** field, the license key is then installed from the dataset of the license key file into the license information dataset.
- If you entered the value in the **Key Code** field, the entered key code will be installed into the license information dataset.

The initial panel lists only licenses that are already installed. This panel updates to display the latest installed license information when an installation completes, or the **F4=Refresh** key is pressed.

Message panel

The Message Panel displays license installation results.

```
                              Message Panel                 Row 1 to 1 of 1
Command ===> ____________________________________________ Scroll ===> PAGE

                                                        2008/03/11 20:54:26
License Information Dataset:
BCM.CCENTRAL.LICENSE

License Key Dataset or Key Code:
BCM.PERM.KEY



Messages:
YK9001I The license key(s) has been installed
***************************** Bottom of data ******************************

 F1=Help        F7=Backward    F8=Forward    F12=Cancel
```

Discover/Define Configuration panel (configuration file definitions)

The Discover/Define Configuration panel displays the menu related to volume scans, route list definitions, path set definitions, and copy group definitions.

```
                        Discover/Define Configuration
Option ===> ____________________________________________________________


Enter a selection choice

    1 Discover Hitachi Storage System
    2 Route Config
    3 Path Set Definitions
    4 Copy Group Definitions

 F1=Help   F3=Exit
```

The following table lists and describes the items in the Discover/Define Configuration panel. Specify the number corresponding to the operation to be performed.

Item	Description
1 Discover Hitachi Storage System	Scans the volumes.
2 Route Config	Defines the route list.
3 Path Set Definitions	Defines the path set.
4 Copy Group Definitions	Defines the copy group/copy pair.

For instructions on how to create a configuration file, see the *Hitachi Business Continuity Manager User Guide*.

The configuration file needed to use Business Continuity Manager can be created in the Discover/Define Configuration panel.

Before creating copy groups, you must scan the volumes to be used and then create the disk configuration definition files. If the disk configuration definition files exist, the scanning is not required.

Panel transition from the Discover Hitachi Storage System panel

The following figure shows the panel transitions starting from the Discover Hitachi Storage System panel.

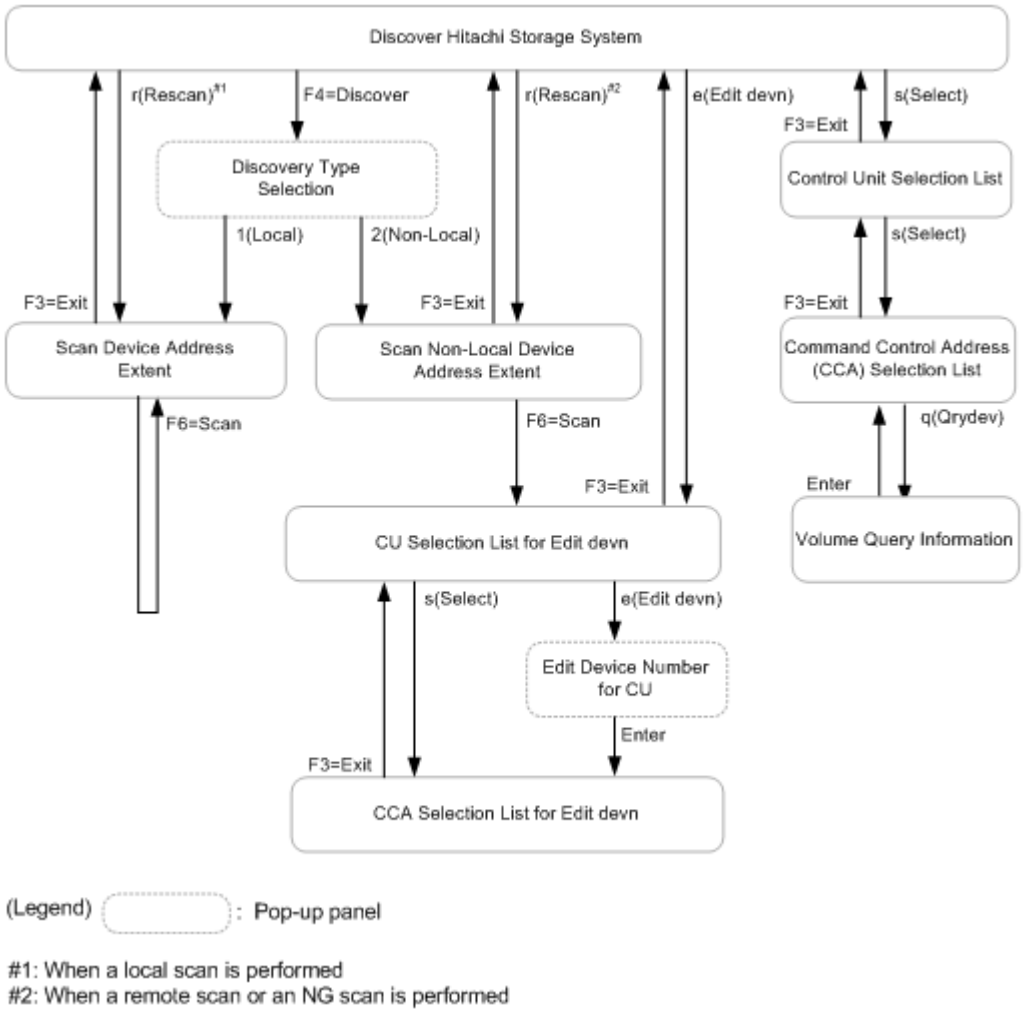


Figure 1-4 Panel transition from the Discover Hitachi Storage System panel

Discover Hitachi Storage System panel

The Discover Hitachi Storage System panel displays a list of storage systems detected by performing a scan.

```
                        Discover Hitachi Storage System         Row 1 to 6 of 6
Command ===> ____________________________________________________ Scroll ===> PAGE

                                                          2016/07/28 13:54:26
Supported actions: s(Select), d(Delete), r(Rescan), e(Edit devn)

AC  S/N---   Device Address Domain ------  Description --------------------
_   14001 *  R5L                           DISCOVERED-REMOTE-STORAGE
_   14002 %  R5NG                          DISCOVERED-NONGEN-STORAGE
_   14002    R5P
_   64050 *  R5L                           DISCOVERED-REMOTE-STORAGE
_   64051 %  R5NG                          DISCOVERED-NONGEN-STORAGE
_   64051    R5P
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F4=Discover  F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Discover Hitachi Storage System panel.

Item	Description
AC	Specify an action. • `s`: Displays the Control Unit Selection List panel used to display a list of control units detected by performing a volume scan. • `d`: Deletes the results of a volume scan. • `r`: Performs a scan. The Scan Device Address Extent panel or Scan Non-Local Device Address Extent panel is displayed. • `e`: Displays the CU Selection List for Edit devn panel used to display a list of control units detected in a remote scan or NG scan.
S/N	Storage system serial numbers The following marks to the right of **S/N** indicate whether a remote scan or NG scan has been executed. • `*`: A remote scan has been executed. • `-`: A remote scan has not yet been executed. • `%`: An NG scan has been executed.
Device Address Domain	Device address domain ID to which the storage systems belong
Description	Storage system descriptions (can be edited) • `DISCOVERED-REMOTE-STORAGE`: A remote scan has been executed. • `UNDISCOVERED-REMOTE-STORAGE`: A remote scan has not yet been executed. • `DISCOVERED-NONGEN-STORAGE`: An NG scan has been executed.

Related operations on copy groups become unavailable if the volume scan result is deleted.

Pressing the **F4=Discover** key displays the Discovery Type Selection panel for selecting the scan type.

Note: When you enter an action in the **AC** column, complete the action by pressing the **Enter** key, and then perform the next operation.

Discovery Type Selection panel

In the Discovery Type Selection panel, you can select a scan type.

```
           Discovery Type Selection
Command ===> ________________________________________

Select either of the following numbers, depending on
the type of discovery you want to perform:
 _  1. Local Scan
    2. Non-Local Scan
```

```
 F1=Help     F12=Cancel
```

The following table lists and describes the items in the Discovery Type Selection panel. Specify the number corresponding to the operation to be performed.

Item	Description
1. Local Scan	Local scan
2. Non-Local Scan	Remote scan or NG scan

Scan Device Address Extent panel

In the Scan Device Address Extent panel, you can perform a local scan.

```
                          Scan Device Address Extent
Command ===> ____________________________________________________________

                                                        2016/07/14 16:42:03

Select one field from among Device Num and Volser by entering "/". Next,
specify any contiguous range of device address, and then press the F6=Scan key
to discover Hitachi storage systems and devices.

Device Num ( _  )   |   Start: ____         End: ____        SCHSET: _

Volser     ( _  )   |   Start: ______       End: ______
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

 F1=Help      F3=Exit      F6=Scan      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Scan Device Address Extent panel.

Item	Description
Device Num	If you want to scan device numbers, add a check mark (/), and specify the range of device numbers to be scanned by **Start** and **End** (Ascending order by hexadecimal number). For **SCHSET**, specify the subchannel set that you want to scan. • 0 to 3: Volumes of the specified subchannel set ID are to be scanned. • *: Volumes of all subchannel IDs are to be scanned. 0 is assumed if **SCHSET** is omitted. Note: The device number range cannot be omitted. To scan only one volume, specify the same value for both **Start** and **End**.
Volser	If you want to scan volume serial numbers, add a check (/), and specify the range of the volume serial numbers to be scanned by **Start** and **End** (Order by EBCDIC code). The online volumes with the specified volume serial numbers are to be scanned. When multiple subchannel sets are used, volumes whose device numbers are the same as those of the scanned online volumes are scanned in all subchannel sets.

Item	Description
XXXXX...X	Displays the number of volumes detected by a local scan.

When the **F6=Scan** key is pressed after the above items are specified, volumes are scanned within the specified range. If an invalid character is specified, or if the value specified for **Start** is greater than the value specified for **End**, an error message prompts you to re-enter the values.

After the scanning operation, the number of detected volumes is displayed. The new information is displayed in the Discover Hitachi Storage System panel. The information on the scanned volume configuration is saved in the disk configuration definition file. For details about the name of the created disk configuration definition file, see Names of configuration files on page 3-2.

Scan Non-Local Device Address Extent panel

In the Scan Non-Local Device Address Extent panel, you can perform a remote scan or NG scan.

```
                    Scan Non-Local Device Address Extent
Command ===> ____________________________________________________________

                                                        2016/07/29 10:21:25

Specify any contiguous range of remote or Non Gen'ed device address.
Then press the F6=Scan key to discover devices in Hitachi storage systems.

Non-Local Device Address Domain . . . . LA_________________________
Storage System S/N  . . . . . . . . . . 14001

Device Address    |  Start CU: __  CCA: __
                  |  End   CU: __  CCA: __

 F1=Help    F3=Exit    F6=Scan   F12=Cancel
```

The following table lists and describes the items in the Scan Non-Local Device Address Extent panel.

Item	Description
Non-Local Device Address Domain	Device address domain ID of the storage system for which a remote scan or an NG scan will be performed.
Storage System S/N	Serial number of the storage system for which a remote scan or an NG scan will be performed.
Device Address	Specify **Start** and **End** for the device address (control unit and command control address) range to be remote-scanned or NG-scanned.# Specify the hexadecimal number in ascending order. If the **CCA** is omitted, the **Start** and **End** will be set to `00` and `FF` respectively.

#: Do not include volumes that belong to a copy pair that was created by Storage Navigator. Doing so may cause copy pair operations to be disabled.

When the **F6=Scan** key is pressed, volumes within the specified values are scanned. If an invalid character is specified, or if the value specified for **Start** is greater than the value specified for **End**, an error message prompts you to re-enter the values.

The information on the scanned disk configuration is saved in the disk configuration definition file.

Note: The following table describes the command devices used when an NG scan is performed. If you want to change the command device to be used, modify the environment with reference to the following table.

Value specified for Remote DKC Function in the Set Defaults panel	First storage system of the route list specified for Preset RouteListID in the Set Defaults panel	Command device used when an NG scan is performed
N	Not applicable	The first command device of the list that was sorted in ascending order by control unit and command control address. The list includes the command devices that have been detected by the local scan.
Y	If the storage system is not a target for the NG scan	
	If the storage system is a target for the NG scan	The command device of the first storage system in the route list that has been specified for **Preset RouteListID** and **Preset Route Label**.

CU Selection List for Edit devn panel

The CU Selection List for Edit devn panel displays a list of control units detected by remote scans or NG scans.

```
                        CU Selection List for Edit devn         Row 1 to 1 of 1
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                          2019/01/28 14:19:14
Supported actions: s(Select), e(Edit devn)

Device Address Domain  : R5L
Description  . . . : DISCOVERED-REMOTE-STORAGE
Storage System S/N : 14001  Model : VSP5100   uCode : 80050002  IFType : 5050
Software Keys TC ( Y  )  SI ( Y  )   UR ( Y  )
--------------------------------------------------------------------------------
AC  CU   SSID  Dummy Devn  Information
_   01   2354  0FF30
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the CU Selection List for Edit devn panel.

Item	Description
Device Address Domain	Device address domain ID to which the control unit belongs
Description	Description of the storage system to which the control unit belongs
Storage System S/N	Serial number of the storage system to which the control unit belongs
Model	Model of the storage system to which the control unit belongs
uCode	Microcode information of the storage system to which the control unit belongs
IFType	Interface version of the storage system to which the control unit belongs
Software Keys • **TC** - TrueCopy • **SI** - ShadowImage • **UR** - Universal Replicator	Displays whether the copy type can be used by storage system: • `Y`: Copy type can be used. • `N`: Copy type cannot be used.
AC	Specify an action. • `s`: Displays the CCA Selection List for Edit devn panel used to display detailed information for the control unit. • `e`: Displays the Edit Device Number for CU panel used to assign a dummy device number to the control unit.
CU	Control unit number
SSID	SSID of the control unit
Dummy Devn	The dummy subchannel set ID and dummy device number assigned to the start device (the device with the lowest command control address) in the control unit.
Information	When the control unit has one or more volumes that are not assigned a dummy device number, `NOTSET` is displayed.

If a command device is not contained within the scanned range specified in the Scan Non-Local Device Address Extent panel, the dummy device numbers are not assigned to the command devices, and the CU Selection List for Edit devn panel displayed after the scan does not display the command devices. Because of this, if you exit the CU Selection List for Edit devn panel by pressing the **F3=Exit** key, and move to the CU Selection List for Edit devn panel again by specifying `e` in the **AC** column in the Discover Hitachi Storage System panel to edit a dummy device number, `NOTSET` is displayed in the **Information** for the control unit number to which the command device belongs. In such a case, assign a dummy device number to the command device.

CCA Selection List for Edit devn panel

The CCA Selection List for Edit devn panel displays the dummy device numbers assigned to volumes detected by remote scans or NG scans, for each device.

```
                        CCA Selection List for Edit devn      Row 1 to 16 of 16
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                            2019/01/28 14:19:27
Device Address Domain  : R5L
Description  . . . : DISCOVERED-REMOTE-STORAGE
Storage System S/N : 14001  Model : VSP5100   uCode : 80050002  IFType : 5050
Control Unit . . . : 01
--------------------------------------------------------------------------------
                        Conflict Devices -
SSID  CCA  Dummy Devn  S/N      CU   CCA
2354  10-  0FF30
2354  11-  0FF31
2354  12-  0FF32
2354  13-  0FF33
2354  14-  0FF34
2354  15-  0FF35
2354  16-  0FF36
2354  17-  0FF37
2354  18-  0FF38
2354  19-  0FF39
2354  1A-  0FF3A
2354  1B-  0FF3B
2354  1C-  0FF3C
2354  1D-  0FF3D
2354  1E-  0FF3E
2354  1F-  0FF3F
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the CCA Selection List for Edit devn panel.

Item	Description
Device Address Domain	Device address domain ID to which a device belongs
Description	Description of the storage system to which a device belongs
Storage System S/N	Serial number of the storage system to which a device belongs
Model	Model of the storage system to which a device belongs
uCode	Microcode information of the storage system to which a device belongs
IFType	Interface version of the storage system to which a device belongs
Control Unit	Control unit number to which a device belongs
SSID	SSID of the control unit to which a device belongs
CCA	The two leftmost characters indicate the command control address of the device in hexadecimal. The rightmost character indicates, as follows, whether the command control address is an external volume.

Item		Description
		• +: An external volume • –: Not an external volume • Blank: The volume attribute is unknown.
Dummy Devn		The dummy subchannel set ID and dummy device number assigned from the Edit Device Number for CU panel The value displayed in this column can be modified.
Conflict Devices	**S/N**	Serial numbers of the storage systems to which devices with conflicting subchannel set IDs and device numbers belong
	CU	The numbers of the control units to which devices with conflicting subchannel set IDs and device numbers belong
	CCA	Command control address of devices with conflicting subchannel set IDs and device numbers The two leftmost characters indicate the command control address of the device in hexadecimal. The rightmost character indicates, as follows, whether the command control address is an external volume. • +: An external volume • –: Not an external volume • Blank: The volume attribute is unknown.

When the **F3=Exit** key is pressed to exit this panel, the system checks for any device number conflicts. If a device number conflict is detected, information about the conflicting volumes is displayed in the **Conflict Devices** column for the corresponding volumes. If multiple duplicated device numbers are detected, the line that is the smallest command control address is displayed at the head of the panel. Until the conflict is resolved, this panel cannot be closed. If the entered dummy device number is incorrect (not a hexadecimal string or fewer than 4 digits), you cannot press the **F3=Exit** key to finish setup, the **F7=Backward** (or **F8=Forward**) key to scroll the screen, or the **F17=DispConf** key to display the settings, until the error is removed.

Edit Device Number for CU panel

In the Edit Device Number for CU panel, you can assign the first dummy device number.

```
                    Edit Device Number for CU
Command ===> ____________________________________________________

     Storage System S/N : 14001  CU : 00  SSID : 2350
     Start of Device Number  . . ______

 F1=Help     F12=Cancel
```

The following table lists and describes the items in the Edit Device Number for CU panel.

Item	Description
Storage System S/N	Serial number of the storage system to which the control unit belongs
CU	Control unit number
SSID	SSID of the control unit
Start of Device Number	Specify the dummy subchannel set ID and the first dummy device number assigned to the control unit

Control Unit Selection List panel

The Control Unit Selection List panel displays a list of detected control units.

```
                         Control Unit Selection List          Row 1 to 2 of 2
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                          2019/02/26 15:31:29
Supported actions: s(Select), d(Delete)

Device Address Domain  : SF
Description  . . . : SAN FRANCISCO SAMPLE
Storage System S/N : 14002  Model : VSP5100   uCode : 80050002  IFType : 5050
Software Keys TC ( Y  )  SI ( Y  )   UR ( Y  )
--------------------------------------------------------------------------------
AC CU - SSID
S  00   2340
_  01   2344
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Control Unit Selection List panel.

Item	Description
Device Address Domain	Device address domain ID to which the control unit belongs
Description	Description of the storage system to which the control unit belongs
Storage System S/N	Serial number of the storage system to which the control unit belongs
Model	Model of the storage system to which the control unit belongs
uCode	Microcode information of the storage system to which the control unit belongs
IFType	Interface version of the storage system to which the control unit belongs
Software Keys • **TC** - TrueCopy • **SI** - ShadowImage	Displays whether the copy type can be used by storage system: • `Y`: Copy type can be used. • `N`: Copy type cannot be used.

Item	Description
• **UR** - Universal Replicator	
AC	Specify an action: • `s`: Displays the Command Control Address (CCA) Selection List panel used to display a list of volumes in the control unit. • `d`: Specify this option if you want to delete a volume in the control unit. The Confirm Configuration Device Deletion panel appears in a pop-up panel.
CU	Control unit number
SSID	SSID of the control unit If the control unit has multiple SSIDs, one of them is displayed.

Command Control Address (CCA) Selection List panel

The Command Control Address (CCA) Selection List panel displays details of the selected control units.

```
                  Command Control Address (CCA) Selection Lis Row 1 to 12 of 16
Command ===> ________________________________________________ Scroll ===> PAGE

                                                          2019/02/26 15:31:47
Supported actions : q(Qrydev), d(Delete)
Device Address Domain  : SF
Description  . . . : SAN FRANCISCO SAMPLE
Storage System S/N : 14002  Model : VSP5100   uCode : 80050002  IFType : 5050
Control Unit . . . : 00
--------------------------------------------------------------------------------
AC  SSID  CCA  Device Number  Volume Serial Number       Cyls  Status
Q   2340  10-  07310          BCM000                   262668  CDEV (0001)
_   2340  11-  07311          BCM001                   262668  Paired
_   2340  12-  07312          BCM002                   262668
_   2340  13-  07313          BCM003                   262668  Simplex
_   2340  14-  07314          BCM004                   262668  Qrydev RC = 36
_   2340  15-  07315          BCM005                   262668  Mismatch
_   2340  16-  07316                                   262668
_   2340  17-  07317                                   262668
_   2340  18-  07318                                   262668
_   2340  19-  07319                                   262668
_   2340  1A-  0731A                                   262668
_   2340  1B-  0731B                                   262668


 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Command Control Address (CCA) Selection List panel.

Item	Description
Device Address Domain	Device address domain ID to which a device belongs
Description	Description of the storage system to which a device belongs

Item	Description
Storage System S/N	Serial number of the storage system to which a device belongs
Model	Model of the storage system to which a device belongs
uCode	Microcode information of the storage system to which a device belongs
IFType	Interface version of the storage system to which a device belongs
Control Unit	Number of the control unit to which a device belongs
AC	Specify an action. • `q`: Specify this option if you want to display volume information. • `d`: Specify this option if you want to delete a volume. The Confirm Configuration Device Deletion panel appears in a pop-up panel.
SSID	SSID of the control unit to which a device belongs
CCA	The two leftmost characters indicate the command control address of the device in hexadecimal. The rightmost character indicates, as follows, whether the command control address is an external volume. • `+`: An external volume • `-`: Not an external volume • Blank: The volume attribute is unknown.
Device Number	Subchannel set ID and device number of a device
Volume Serial Number	Volume serial number of a device
Cyls	Volume capacity of a device (the number of cylinders)
Status	Displays the execution result of the `YKQRYDEV` command. Displayed statuses are as follows: • `Simplex`: A copy pair is not created. • `Paired`: A copy pair is created. • `CDEV (`*xxxx*`)`: The volume is defined as a command device. *xxxx* indicates the APID. • `Mismatch`: The values of the disk configuration definition file and the storage system are different. • `Qrydev RC=`*xx*: The `YKQRYDEV` command failed. *xx* indicates the return code of the `YKQRYDEV` command. • `N/A`: The status is one in which information cannot be obtained by the `YKQRYDEV` command.

If you execute `q` for a local device, check whether the serial number, control unit, command control address, and SSID obtained from the storage system match the defined serial number, control unit, command control address, and SSID. If they are different, `Mismatch` is displayed in the Status column.

If you execute `q` for a device other than a local device, the Remote DKC Control function needs to be available for the target device.

Volume Query Information panel

In the Command Control Address (CCA) Selection List panel, if you specify `q` for **AC**, the Volume Query Information panel appears and displays the volume status.

The following figure shows the Volume Query Information panel.

```
                        Volume Query Information      Row 1 to 1 of 1
Command ===> ____________________________________________________ Scroll ===> PAGE

SN     SSID  CU  CCA  DEVN    Status
53039  000E  08  01   00002-  Paired

CopyPair Information
                           - Pair Volume --
Type  Status         Dir  SN    SSID CU CCA
TC    DUPLEX (02)     >   53038 000D 08 01
SI    SUSPOP (04)     >   53039 000E 08 02
****************************** Bottom of data ********************************

 F1=Help       F7=Backward   F8=Forward   F12=Cancel
```

The following table describes the items in the Volume Query Information panel.

Item	Description
SN	Serial number of the storage system#1
SSID	SSID of the storage system#1
CU	Control unit of the storage system#1
CCA	Command control address of the storage system#1
DEVN	Subchannel set ID and device number at definition. The following volume online information is displayed to the right of **DEVN**: • `*`: Online • `-`: Offline Nothing is displayed when volume online information cannot be obtained. If no DEVN is defined, `*****` is displayed.
Status	Displays the copy pair status of the volume. • `Simplex`: A copy pair is not created. • `Paired`: A copy pair is created. • `CDEV (`*xxxx*`)`: The volume is defined as a command device. *xxxx* indicates the APID. • `Mismatch`: The values of the disk configuration definition file and the storage system are different.

Item			Description
CopyPair Information	**Type**		If the specified volume creates a copy pair, the copy type is displayed.
	Status		Copy pair status#2
	Dir		Copy direction
	Pair Volume	**SN**	Serial number of the storage system of the volume that creates a copy pair
		SSID	SSID of the control unit to which the volume that creates a copy pair belongs
		CU	Number of the control unit to which the volume that creates a copy pair belongs
		CCA	Command control address of the volume that creates a copy pair

Note:

If information cannot be obtained by the `YKQRYDEV` command, `N/A` is displayed.

#1

For a local device, the information about the storage system related to DEVN is output.

#2

For details about the copy pair status to be displayed, see the table copy pair statuses of volumes obtained by the `YKQRYDEV` command in the *Hitachi Business Continuity Manager User Guide*. For a command device, `CDEV` (*apid*) is displayed in the **Status** column (apid: APID).

Panel transitions from the Route Config panel

The following figure shows the panel transitions starting from the Route Config panel.

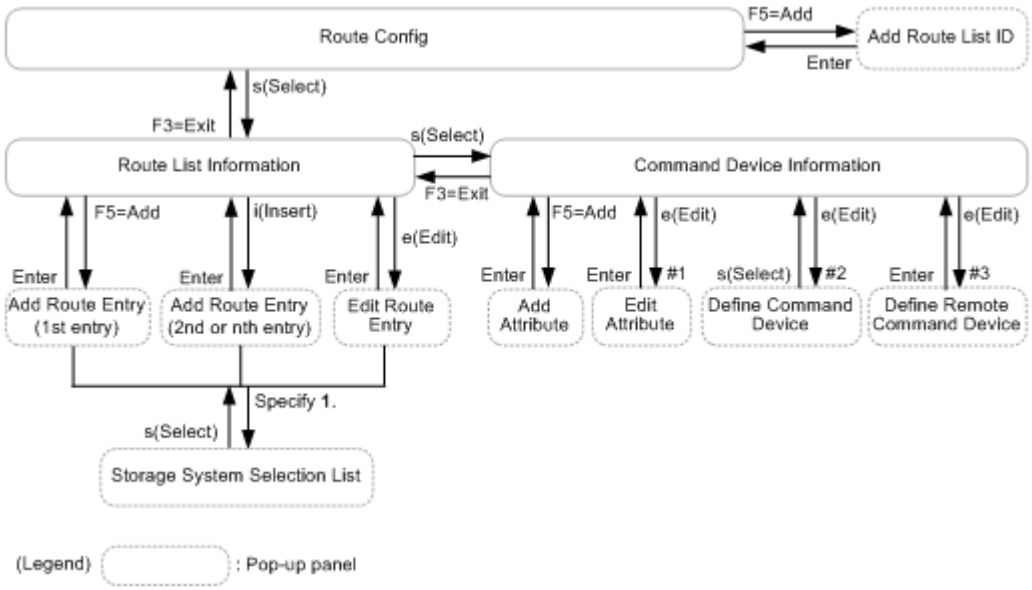


Figure 1-5 Panel transitions from the Route Config panel

#1: Displayed when specifying e for **AC** on the left side of **Label**.

#2: Displayed when a device number or dummy device number is assigned.

#3: Displayed when a dummy device number is not assigned.

Route Config panel

The Route Config panel displays the list of route list IDs. In this panel, you can define a route list.

The route list definition is required when using the Remote DKC Control function and the TrueCopy consistency preservation function. It defines routes between devices and command devices so that these devices are available.

```
                                Route Config                    Row 1 to 2 of 2
Command ===> ____________________________________________________ Scroll ===> PAGE

                                                          2008/02/28 17:18:50
Supported actions: s(Select), d(Delete)

AC RouteList ID ------------
_  UR2DC
_  TC1
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F5=Add       F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Route Config panel.

Item	Description
AC	Specify an action.

Item	Description
	• s: Displays the list of storage systems included in the selected route list. The Route List Information panel is displayed.#1 • d: Deletes the route list ID.#2
RouteList ID	Route list ID

#1

Route list definition files for the route list IDs that are not selected are also loaded. If there is an error in any of these route list definition files and the Exception Message panel is displayed, you can edit a selected route list definition file by closing the Exception Message panel.

#2

Only the route list definition file is deleted when deleting the route list ID. The command device definition file is not deleted.

If you press the **F5=Add** key, the Add Route List ID panel appears. In this panel, you can create route list IDs. For details about the Add Route List ID panel, see Add Route List ID panel on page 1-43.

Add Route List ID panel

In the Add Route List ID panel, specify a route list ID.

```
                    Add Route List ID
Command ===> ____________________________________________

Supply the Route List ID. Then press Enter.

  Route List ID  . . . . . . . . UR2DC___

 F1=Help       F12=Cancel
```

For details about the characters and maximum length that can be specified, see Names of configuration files on page 3-2.

Route List Information panel

The Route List Information panel displays the list of storage systems included in the route defined in the selected route list.

```
                            Route List Information            Row 1 to 3 of 3
Command ===> ________________________________________________ Scroll ===> PAGE

                                                        2011/07/16 13:42:48
Route List ID  . . . : ROUTELST

Supported actions: s(Select), i(Insert), e(Edit), d(Delete)
-------1st--------      -------2nd--------      -------3rd------>-
AC----DADID (SN)--      AC----DADID (SN)--      AC----DADID (SN)--
_  DAD0A           -+-> _  DAD1B           ---> _  DAD1C
    (00001)         :       (00002)                 (00003)
_  =                +-> _  DAD2B           ---> _  DAD2C
```

```
                    :       (00012)                 (00013)
_  =                +-> _  PRIM.DAD.RAID7+      _
                            (00022)
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F5=Add       F7=Backward  F8=Forward  F10=Prev
F11=Next     F12=Cancel
```

If there are multiple routes with the same first storage system, = is displayed for the first storage system of the second and subsequent routes.

If the list of storage systems continues beyond the displayable area, > is displayed to the right of the header. Pressing the **F11=Next** key displays the storage systems that could not be displayed.

The figure below shows the Route List Information panel that is displayed when the **F11=Next** key is pressed. < is displayed to the left of the header. Pressing the **F10=Prev** key returns to the previous screen.

```
                            Route List Information            Row 1 to 3 of 3
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                          2011/07/16 13:42:50
Route List ID  . . . : ROUTELST

Supported actions: s(Select), i(Insert), e(Edit), d(Delete)
-<-----2nd--------      -------3rd--------      -------4th--------
AC----DADID (SN)--      AC----DADID (SN)--      AC----DADID (SN)--
_  DAD1B           ---> _  DAD1C                _
   (00002)                 (00003)
_  DAD2B           ---> _  DAD2C           ---> _  DAD2D
   (00012)                 (00013)                 (00014)
_  PRIM.DAD.RAID7+      _                       _
   (00022)
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F5=Add       F7=Backward  F8=Forward  F10=Prev
F11=Next     F12=Cancel
```

The following table lists and describes the items in the Route List Information panel.

Item	Description
Route List ID	Route list ID selected in the Route Config panel
AC	Specify an action. Actions are not accepted in the **AC** for which no storage system is defined. • `s`: Displays the command devices defined for the specified route. The Command Device Information panel is displayed. • `i`: Adds the next storage system. The Add Route Entry panel is displayed. A storage system is added to the right of a storage system for which `i` is specified for the **AC**. If a storage system has already been defined to the right of the storage system, a new storage system is added, and the already-defined storage systems are displayed to the right of the new storage system.

Item	Description
	• `e`: Changes the device address domain ID or serial number of a storage system that is not the first storage system in the route. The Edit Route Entry panel is displayed. To change the device address domain ID or serial number of the first storage system in the route, delete the storage system, press the **F5=Add** key, and then redefine the first storage system. • `d`: If this action is specified for the first storage system in the route, the route is deleted. If this action is specified for any other storage system, that storage system is deleted.
DADID (SN)	The device address domain ID and serial number of the storage system This item is displayed in *`DADID (serial-number)`* format. If *DADID* is more than 15 characters, `+` is displayed as the 15th character, and the subsequent characters are omitted. If you want to view the omitted characters, specify `e` for **AC** to display the Edit Route Entry panel.

To define a storage system that will be the first one in a route, press the **F5=Add** key. Pressing the **F5=Add** key displays the Add Route Entry panel. For details about the Add Route Entry panel, see Add Route Entry panel on page 1-51.

Command Device Information panel

The Command Device Information panel displays the information about the command device lines and command devices included in the route. In this panel, you can define command device lines.

```
                 Command Device Information                    Row 1 to 1 of 1

Command ===> ________________________________________________ Scroll ===> PAGE
                                                            2011/07/16 13:42:48
Supported actions: e(Edit), d(Delete)
       DADID . : DADA                 DADB                  DADC
       SN . . .: 00001                00002                 00003
                 --------1st--------- --------2nd--------- --------3rd------->-
AC Label    APID AC DEVN  SSID CU CCA AC DEVN  SSID CU CCA AC DEVN  SSID CU CCA
_  ANY      0001 _  00001 0033 06 01  _  00011 0011 06 01  _  00021 000D 08 01
****************************** Bottom of data ******************************

 F1=Help      F3=Exit      F5=Add       F7=Backward  F8=Forward  F10=Prev
F11=Next     F12=Cancel
```

If the list of command devices continues beyond the displayable area, > is displayed to the right of the header. Pressing the **F11=Next** key displays the command devices that could not be displayed.

The figure below shows the Command Device Information panel that is displayed when the **F11=Next** key is pressed. < is displayed to the left of the header. Pressing the **F10=Prev** key returns to the previous screen.

```
                  Command Device Information                    Row 1 to 1 of 1

Command ===> ___________________________________________________ Scroll ===> PAGE
                                                              2011/07/16 13:42:50
Supported actions: e(Edit), d(Delete)
       DADID . : DADB                 DADC                 DADD
       SN . . .: 00002                00003                00004
                 -<------2nd -------- --------3rd--------- --------4th---------
AC Label    APID AC DEVN  SSID CU CCA AC DEVN  SSID CU CCA AC DEVN  SSID CU CCA
_  ANY      0001 _  00011 0011 06 01  _  00021 000D 08 01  _  00031 001D 04 01
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F5=Add       F7=Backward  F8=Forward  F10=Prev
F11=Next     F12=Cancel
```

The following table lists and describes the items in the Command Device Information panel.

Item	Description
DADID	The device address domain ID for the storage system selected in the Route List Information panel If the device address domain ID is more than 19 characters, + is displayed as the 19th character, and the subsequent characters are omitted.
SN	The serial number of the storage system selected in the Route List Information panel
Leftmost **AC**	Specify an action for the command device line. • e: Changes the route label or APID. The route labels or APIDs of all other command devices in the same command device group as the operation-target command device are also changed. Command devices registered in a route list subject to editing or a route list not subject to editing are in the same command device group if they have the same first device address domain and the same APID. The route label or APID is changed when you press the **F3=Exit** key in the Command Device Information panel and the Route List Information panel is displayed. • d: Deletes the selected command device line. All other command devices in the same command device group as the operation-target command device are also deleted. Command devices registered in a route list subject to editing or a route list not subject to editing are in the same command device group if they have the same first device address domain and the same APID.
AC other than the leftmost one	Specify an action for the command device. Actions are not accepted in the **AC** for which no storage system is defined in the Route List Information panel. • e: Edits the command device information. If a device number or dummy device number is assigned, the Define Command Device panel is displayed. If a dummy device number is not assigned, the Define Remote Command Device panel is displayed.

Item	Description
Label	Route label
APID	The APID of the command device
DEVN	The subchannel set ID and device number of the command device ***** is displayed if a command device has been specified in the Define Remote Command Device panel.
SSID	The SSID of the command device
CU	The CU of the command device
CCA	The CCA of the command device

If you press the **F5=Add** key, the Add Attribute panel appears. In this panel, you can define command device lines. For details about the Add Attribute panel, see Add Attribute panel on page 1-50.

Define Command Device panel

In the Define Command Device panel, select the device to be defined as the command device.

```
                    Define Command Device    Row 1 to 8 of 13
Command ===> ______________________________ Scroll ===> PAGE

Supported action: s(Select)

DADID  . : DADP
SN . . . : 64051
Current Selection :
  CU : 00  SSID : 6800  CCA : 00
  DEVN : 07340  VOLSER :

AC  CU  SSID  CCA  DEVN   VOLSER
_   00  6800  00   07340
_   00  6800  01   07341
_   00  6800  02   07342
_   00  6800  03   07343
_   00  6800  04   07344
_   00  6800  05   07345
_   00  6800  06   07346
_   00  6800  07   07347
 F1=Help        F6=Sort        F7=Backward    F8=Forward
F12=Cancel
```

The following table lists and describes the items in the Define Command Device panel.

Item	Description
DADID	Device address domain ID to which the devices belong
SN	Serial number of the storage system to which the devices belong
Current Selection	If a command device has already been defined, information about the already-defined command device is displayed. If a

Item	Description
	command device has not been defined, a blank is displayed for the **CU** and **SSID** items.
AC	Specify an action. • `s`: Selects a command device to be used in the storage system. You can specify only one command device.
CU	The number of the control unit to which the command device belongs
SSID	SSID of the control unit to which the command device belongs
CCA	Command control address of the command device
DEVN	Subchannel set ID and device number of the command device
VOLSER	Volume serial number of the command device

If you press the **F6=Sort** key, the Sort the Define Command Device panel appears. In this panel, you can specify the order for displaying devices. For details about the Sort the Define Command Device panel, see Sort the Define Command Device panel on page 1-49.

You can use the `LOCATE`, `SELECT`, and `SORT` commands in the Define Command Device panel. For details about how to use each command, see Commands that can be used in the ISPF panels on page 1-4.

You can specify the following fields for a sort key of the `SORT` command:

Name of field	Sorted by	Direction
`CU`	Number of the control unit to which the command device belongs	Ascending
`CCA`	Command control address of the command device	Ascending
`DEVN`	Subchannel set ID and device number of the command device	Ascending
`VOLSER`	Volume serial number of the command device	Ascending

You can specify the following fields for a condition of the `SELECT` command:

Name of field	Value in field	Type
`CU`	Number of the control unit to which the command device belongs	Hexadecimal
`CCA`	Command control address of the command device	Hexadecimal
`DEVN`	Subchannel set ID and device number of the command device	Hexadecimal
`VOLSER`	Volume serial number of the command device	Character string

If you omit the field name, `DEVN` will be set as a default value.

Sort the Define Command Device panel

In the Sort the Define Command Device panel, you can specify a sort key for displaying devices.

```
      Sort the Define Command Device
Option ===> ______________________________

Select the desired sort sequence:
Choose one
1  CU
2  CCA
3  Device Number
4  Volume Serial Number

 F1=Help   F12=Cancel
```

In the Sort the Define Command Device panel, you can select the sort key from the following items:

Item	Sorted by
1. CU	Number of the control unit to which the command device belongs
2. CCA	Command control address of the command device
3. Device Number	Subchannel set ID and device number of the command device
4. Volume Serial Number	Volume serial number of the command device

Define Remote Command Device panel

In the Define Remote Command Device panel, you can specify the SSID, CU, and CCA information to specify the device to be defined as the command device.

```
      Define Remote Command Device
Command ===> ___________________________

DADID  . : DADP
SN . . . : 64051

Device Address for Command Device
  SSID . . ____
  CU . . . __
  CCA  . . __

 F1=Help      F12=Cancel
```

The following table lists and describes the items in the Define Remote Command Device panel.

Item	Description
DADID	The device address domain ID to which the device belongs
SN	The serial number of the storage system to which the device belongs

Item		Description
Device Address for Command Device	**SSID**	Specify, as a hexadecimal number, the SSID of the command device to be assigned to the storage system.
	CU	Specify, as a hexadecimal number, the CU of the command device to be assigned to the storage system.
	CCA	Specify, as a hexadecimal number, the CCA of the command device to be assigned to the storage system.

Add Attribute panel

In the Add Attribute panel, you can specify the route label of a command device line and the APID of a command device.

```
                Add Attribute
Command ===> ________________________

 Label  . . LABEL1__
 APID . . . 1234

  F1=Help     F12=Cancel
```

The following table lists and describes the items in the Add Attribute panel.

Item	Description
Label	Specify a route label for the command device line.# The specification of the route label is optional.
APID	Specify an APID for the command device. Use a 4-digit hexadecimal number (`0000` to `FFFF`). The specified value must be unique in the storage system.

#: You can specify a string of eight characters or less that consists of one or more parts, joined by periods. Each part must start with an uppercase alphabetic character, and consist of uppercase alphabetic and numeric characters.

Edit Attribute panel

In the Edit Attribute panel, you can change the route label of a command device line and the APID of a command device.

```
               Edit Attribute
Command ===> ________________________

 Label  . . LABEL1__
 APID . . . 1234

  F1=Help     F12=Cancel
```

The following table lists and describes the items in the Edit Attribute panel.

Item	Description
Label	Specify a new route label for the command device line.# The specification of the route label is optional. By default, the assigned route label is displayed.
APID	Specify a new APID for the command device. Use a 4-digit hexadecimal number (`0000` to `FFFF`). The specified value must be unique in the storage system. By default, the assigned APID is displayed.

#: You can specify a string of eight characters or less that consists of one or more parts, joined by periods. Each part must start with an uppercase alphabetic character, and consist of uppercase alphabetic and numeric characters.

Add Route Entry panel

The Add Route Entry (1st entry) panel defines the first storage system of a route, and the Add Route Entry (2nd or nth entry) panel adds storage systems to a route.

```
            Add Route Entry (1st entry)
Command ===> ______________________________________

Add a storage system to the route list : ROUTELST

Select either of the following numbers, depending
on the type of storage system you want to register:
 1  1. Discovered storage system(s)
    2. An existing storage system via a local scan
       later at the Remote Site (Reverse Route)

DADID and serial number of the storage system:
  DADID . . ______________________________
  SN  . . . ______

 F1=Help   F12=Cancel
```

```
        Add Route Entry (2nd or nth entry)
Command ===> ______________________________________

Add a storage system to the route list : ROUTELST

Select either of the following numbers, depending
on the type of storage system you want to register:
 1  1. Discovered storage system(s)
    2. A new storage system to be discovered
       via a remote scan

DADID and serial number of the storage system:
  DADID . . ______________________________
  SN  . . . ______

 F1=Help   F12=Cancel
```

In the selection field, specify a relevant value based on the status of the storage system to be added. How to specify the storage system varies depending on the value specified in the selection field.

The following table describes the values to specify in the selection field and how to specify a storage system.

Status of the storage system	Value to specify in the selection field	How to specify the storage system to be added (device address domain ID and serial number)
The storage system has already been scanned.	1	If you press the **Enter** key without specifying values for **DADID** and **SN**, a list of selectable storage systems is displayed in the Storage System Selection List panel. Select a storage system from the list. If you specify a value for **DADID** or **SN**, a list of storage systems whose device address domain ID or serial number matches the specified value are displayed in the Storage System Selection List panel. Select a storage system from the list.
A storage system has not yet been scanned.	2	Directly specify values for **DADID** and **SN**.

The following table lists and describes the items in the Add Route Entry panel.

Item		Description
DADID and serial number of the storage system:	**DADID**	Specify the device address domain ID of the storage system to be added. For details about the characters and maximum length that can be specified, see Names of configuration files on page 3-2.
	SN	Specify the serial number of the storage system to be added.

Storage System Selection List panel

The Storage System Selection List panel displays the serial numbers and device address domain IDs of storage systems.

```
                Storage System Selection List  Row 1 to 4 of 4
Command ===> ______________________________ Scroll ===> PAGE

Supported action: s(Select)

  Route List ID : UR2DC
  DADID . . . . :
  SN  . . . . . :

AC SN --  DADID ----------------------
```

```
 _  14002  SF
 _  14001  LA
 _  90063  LA
 _  90209  SF
********************** Bottom of data ************************
 F1=Help        F7=Backward    F8=Forward    F12=Cancel
```

The following table lists and describes the items in the Storage System Selection List panel.

Item	Description
Route List ID	Route list ID selected in the Route Config panel
DADID	Device address domain ID specified in the Add Route Entry panel or the Edit Route Entry panel. A blank is displayed if no device address domain ID has been specified.
SN	Serial number specified in the Add Route Entry panel or the Edit Route Entry panel. A blank is displayed if no serial number has been specified.
AC	Specify an action. • `s`: Selects the device address domain ID and serial number of the storage system.
SN	Selectable storage system serial numbers
DADID	Selectable device address domain IDs

In the initial state, the entries are displayed in ascending order of EBCDIC codes, with **SN** followed by **DADID** as the priority order.

Edit Route Entry panel

In the Edit Route Entry panel, you can update information about the storage systems defined in the route.

```
                  Edit Route Entry
Command ===> ______________________________________

Edit a storage system to the route list : ROUTELST

Select either of the following numbers, depending
on the type of storage system you want to register:
1  1. Discovered storage system(s)
   2. A new storage system to be discovered
      via a remote scan

DADID and serial number of the storage system:
  DADID . . ______________________________
  SN  . . . ______

 F1=Help     F12=Cancel
```

In the selection field, specify a relevant value based on the status of the storage system whose information is to be updated. How to specify the storage system varies depending on the value specified in the selection field.

The following table describes the values to specify in the selection field and how to specify the storage system.

Status of the storage system	Value to specify in the selection field	How to specify the storage system whose information is to be updated (device address domain ID and serial number)
The storage system has already been scanned.	1	If you press the **Enter** key without specifying values for **DADID** and **SN**, a list of selectable storage systems is displayed in the Storage System Selection List panel. Select a storage system from the list. If you specify a value for **DADID** or **SN**, a list of storage systems whose device address domain ID or serial number matches the specified value are displayed in the Storage System Selection List panel. Select a storage system from the list.
A storage system has not yet been scanned.	2	Directly specify values for **DADID** and **SN**.

The following table lists and describes the items in the Edit Route Entry panel.

Item		Description
DADID and serial number of the storage system:	**DADID**	Specify the device address domain ID of the storage system to be changed. For details about the characters and maximum length that can be specified, see Names of configuration files on page 3-2.
	SN	Specify the serial number of the storage system to be changed.

Panel transitions from the Path Set Selection List panel

The following figure shows the panel transitions from the Path Set Selection List panel.

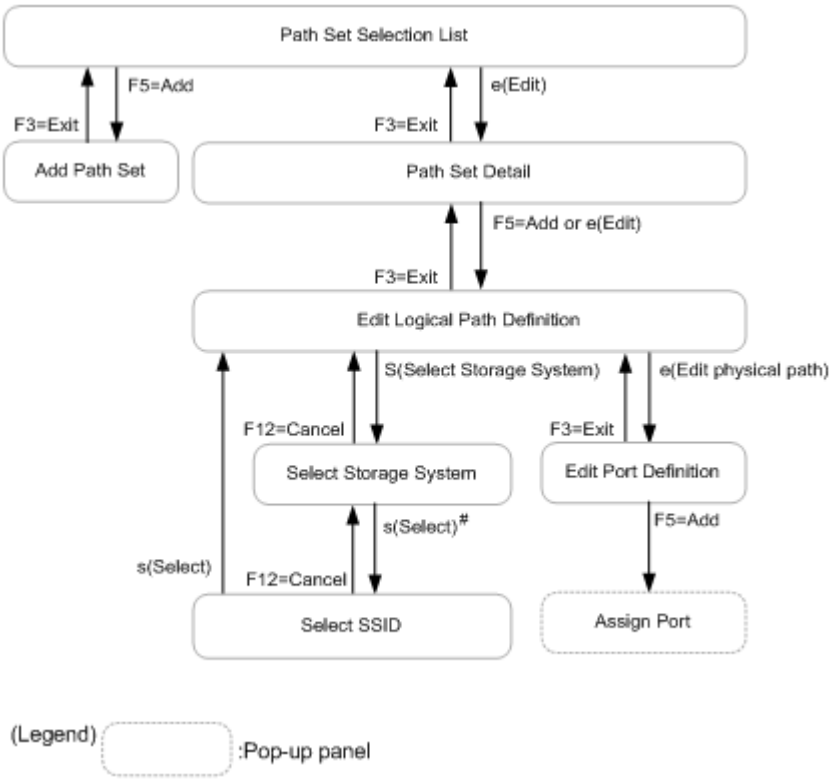


Figure 1-6 Panel transitions from the Path Set Selection List panel

#: If `CU` is specified in **Type** on the Edit Logical Path Definition panel, the Select SSID panel is displayed.

Path Set Selection List panel

The Path Set Selection List panel displays a list of path set IDs.

```
                          Path Set Selection List             Row 1 to 1 of 1
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                          2008/02/28 16:02:59
Supported actions: e(Edit), d(Delete)

AC Path Set ID -------------------------  Description --------------------
_  TESTPATH                               TEST PATH 1
****************************** Bottom of data ******************************

 F1=Help      F3=Exit      F5=Add       F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Path Set Selection List panel.

Item	Description
AC	Specify an action. • `e`: Displays the Path Set Detail panel used to load a path set definition file. • `d`: Deletes a path set definition file.

Item	Description
	When actions are entered in multiple **AC** columns, each is processed in the order displayed.
Path Set ID	Path set ID
Description	A description of the path set

Add Path Set panel

In the Add Path Set panel, you can create a path set definition file.

In the **Path Set ID** column, specify a path set ID to identify the path set definition file. For details about the characters and maximum length that can be specified for path set IDs, see Names of configuration files on page 3-2.

```
                                Add Path Set
Command ===> ____________________________________________________________

                                                        2008/02/28 16:02:07

Enter the following Path Set attributes.

Path Set ID  . . ______________________________________

Press F3=Exit to create the Path Set, F12=Cancel to cancel.

 F1=Help      F3=Exit     F12=Cancel
```

Path Set Detail panel

The Path Set Detail panel displays a list of logical paths defined in the path set definition file.

```
                              Path Set Detail                 Row 1 to 1 of 1
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                        2008/02/28 16:03:27
Supported actions: e(Edit), d(Delete), c(Correct)
Path Set ID  . . . : TESTPATH
Description  . . . . TEST PATH 1______________________
               -------- Primary --------       ------- Secondary -------
AC  Type  SHR  S/N      PathID  CU  SSID  Dir  S/N      PathID  CU  SSID
_   CU    N    64051            00  6800  <>   64052            00  6900
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F5=Add       F6=Sort      F7=Backward  F8=Forward
F12=Cancel
```

The following table lists and describes the items in the Path Set Detail panel.

Item	Description
Path Set ID	Path set ID
Description	A description of the path set. (Can be edited.)
AC	Specify an action.

Item		Description
		• e: Displays the Edit Logical Path Definition panel used to display or edit a logical path. • d: Deletes a logical path from the path set. • c: Verifies the secondary SSID of a logical path, and corrects it if it is incorrect.#2, #3 When actions are entered in multiple **AC** columns, each is processed in the order displayed.
Type		Type of path • CU: Inter-control unit logical path • DKC: Inter-disk controller logical path
SHR		Displays whether this path has shared attributes: • Y: This path has shared attributes. • N: This path has no shared attributes.
Primary	**S/N**	Serial number of the primary storage system
	PathID	Primary path group ID (path group ID in the forward direction)#1
	CU	Primary control unit number
	SSID	Primary SSID#2
Dir		Direction of the path
Secondary	**S/N**	Serial number of the secondary storage system
	PathID	Secondary path group ID (path group ID in the reverse direction)#1
	CU	Secondary control unit number
	SSID	Secondary SSID#2

#1: Valid only when the **Type** is DKC.

#2: Valid only when the **Type** is CU.

#3: In either of the following cases, the secondary SSID of a logical path can be verified and corrected:

- A local scan of a volume of the secondary storage system is performed.
- The Remote DKC Control function can be used.

Tip: The table below shows the command target volume used when the target volume that belongs to the secondary control unit is a Non Gen'ed volume. If you want to change the command target volume to be used, modify the environment with reference to the following table.

Value specified for Remote DKC Function in the Set Defaults panel	First entry of the route list specified for Preset RouteListID in the Set Defaults panel	Command target volume used when the secondary SSID is verified and corrected
N	-	First volume of the volumes for which a local scan is performed and that are sorted in ascending order of control unit values and the command control address values
Y	If the secondary storage system is not the one for the target inter-control unit logical path	
	If the secondary storage system is the one for the target inter-control unit logical path	Command device of the first entry included in the route list specified for **Preset RouteListID** and **Preset Route Label**

In the initial state, the information is displayed in ascending order by priority, as follows: the **S/N** (EBCDIC), **PathID** (hexadecimal number) and then the **CU** (hexadecimal number) for **Primary**.

If you press the **F6=Sort** key, the Sort Logical Paths in the Path Set panel appears. In this panel, you can specify the order for displaying logical paths. For details about the Sort Logical Paths in the Path Set panel, see Sort Logical Paths in the Path Set panel on page 1-64.

In the Path Set Detail panel, you can use the `SORT` command. For details about how to use the `SORT` command, see Commands that can be used in the ISPF panels on page 1-4.

Edit Logical Path Definition panel

In the Edit Logical Path Definition panel, you can display or edit logical paths.

```
                          Edit Logical Path Definition
 Command ===> ____________________________________________________________

                                                        2019/02/28 16:03:38

 Path Set ID  . . . : TESTPATH
 Description  . . . : TEST PATH 1

 Attributes
 Type . . . . . . . . CU   (DKC/CU)
 SHR  . . . . . . . . Y    (Y/N)

 Supported action: s(Select Storage System)
 AC            S/N      Model     IFType  PathID  CU  SSID  CCA
 _  Primary    14002    VSP5100   5050    __      00  2340  1F
 _  Secondary  14001    VSP5500   5050    __      00  2350  1F

Supported action: e(Edit physical path), c(Copy physical path)
 AC            Assigned Physical Path
 _  Forward    04->05
 _  Reverse    05<-04
```

```
F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Edit Logical Path Definition panel.

Item		Description
Path Set ID		Path set ID
Description		A description of the path set
Type		Type of path • `CU`: Inter-control unit logical path • `DKC`: Inter-disk controller logical path
SHR		Displays or specifies whether or not this path has shared attributes (modifiable). • `Y`: This path has shared attributes. The path is deleted only if the `FORCE` parameter is specified when deleting the path. • `N`: This path has no shared attributes. The path is deleted regardless of whether the `FORCE` parameter is specified when deleting the path.
AC		Specify an action. • `s`: Displays the Select Storage System panel used to select the site to display a list of storage systems. When actions are entered in multiple **AC** columns, each is processed in the order displayed.
Primary	**S/N**	Serial number of the primary storage system (modifiable)
	Model#1	Primary storage system model (modifiable)
	IFType	Primary interface version (modifiable)
	PathID	Specify the primary path group ID (path group ID in the forward direction). Specify this item only for the inter-disk controller logical path. If this item is omitted for the inter-disk controller logical path, `00` is assumed.
	CU	Primary control unit number (modifiable)
	SSID	Primary SSID (modifiable)
	CCA	Primary command control address. (modifiable)
Secondary	**S/N**	Serial number of the secondary storage system (modifiable)
	Model#1	Secondary storage system model (modifiable)
	IFType	Secondary interface version (modifiable)
	PathID	Specify the secondary path group ID (path group ID in the reverse direction).

Item		Description
		Specify this item only for the inter-disk controller logical path. If this item is omitted for the inter-disk controller logical path, 00 is assumed.
	CU	Secondary control unit number (modifiable)
	SSID	Secondary SSID (modifiable)
	CCA	Secondary command control address
AC		Specify an action. • e: Displays the Edit Port Definition panel used to edit the physical path of the selected direction. • c: Sets, as the port number of the physical path in the selected direction, the same value that is specified for the port number of the physical path in the reverse direction.#2
Assigned Physical Path	**Forward**	Forward-directed physical paths that have been assigned
	Reverse	Backward-directed physical paths that have been assigned

#1

You can specify the same port number for the initiator port and the target port in the same storage system, only if the value of **Model** is the VSP 5000 series.

#2

You can specify c only if the value of **Model** for the primary storage system and the secondary storage system are both the VSP 5000 series.

- When **Type** is DKC, make sure that you enter the values for **S/N**, **Model**, and **IFType**. **PathID** can be omitted. If **PathID** is not specified, 00 (hexadecimal number) is specified. If the storage system is directly connected to the host, by entering values in **CU** and **CCA**, you can specify the device to which a path operation command is issued during operations on the paths. When you perform an operation on a path while the system is running, select a volume that has little impact on business operations, such as a command device. You do not need to specify **SSID**.
- When **Type** is CU, make sure that you enter the values for **S/N**, **Model**, **IFType**, **CU**, and **SSID**. If the storage system is directly connected to the host, by entering a value in **CCA**, you can specify the device to which a path operation command is issued during operations on the paths. When you perform an operation on a path while the system is running, select a volume that has little impact on business operations, such as a command device. If the storage system is not directly connected to the host and **CCA** is not specified, execution of the YKQRYPTH command will result in an error. To avoid this, make sure that you enter a value for **CCA**. You do not need to specify **PathID**.
- If the storage system to be specified is directly connected to the host, you must enter the values for **S/N**, **Model**, **IFType**, **CU**, **SSID**, and **CCA** for the scanned storage system (that is, the storage system defined in the

disk configuration definition file) in the Discover Hitachi Storage System panel.

- If the serial number of a storage system for which a Non Gen'ed volume has already been defined in the path set definition file to be edited is specified for **S/N**, the command device will issue I/O regardless of the specified values for **CU** and **CCA**.

  The following table describes a relationship between a **S/N** value and values specified for **CU** and **CCA**, and the device to which I/O will be issued:

- The **Model** and **IFType** might be blank if the storage system was selected from the Select Storage System panel. If this is the case, enter a value for **Model** and **IFType**.
- Note that if a control unit number and command control address for Non Gen'ed volumes are entered for **CU** and **CCA**, the route list that includes the storage system specified for **S/N** is required during operations on the paths.

S/N value	Values specified for CU and CCA	Device to which I/O will be issued
The serial number of a storage system that includes Non Gen'ed volumes	A control unit number and command control address for Non Gen'ed volumes	A command device
	A control unit number and command control address for Gen'ed volumes	

- The table below shows the values to be entered for **Model** and **IFType**.

  If the result of selecting a storage system from the Select Storage System panel is that there are no values in **Model** and **IFType**, specify a value for **Model** and **IFType**. If values are already set, you do not need to change the values.

Storage system	Model	IFType
VSP G1000	VSPG1000	4040
VSP G1500	VSPG1500	4646
VSP F1500	VSPF1500	4646
VSP 5100	VSP5100	5050
VSP 5200	VSP5200	5252
VSP 5500	VSP5500	5050
VSP 5600	VSP5600	5252
VSP 5100H	VSP5100H	5050
VSP 5200H	VSP5200H	5252
VSP 5500H	VSP5500H	5050
VSP 5600H	VSP5600H	5252

Select Storage System panel

The Select Storage System panel displays a list of storage systems for which a disk configuration definition file was obtained.

```
                              Select Storage System             Row 1 to 1  of  2
Command ===> ____________________________________________ Scroll ===> PAGE

                                                        2008/02/28 16:04:17
Supported action: s(Select)

AC S/N ---  Device Address Domain ID ---
_  14002    SF
_  14001    LA
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Select Storage System panel.

Item	Description
AC	Specify an action. • `s`: Displays the Select SSID panel used to load a disk configuration definition file. When actions are entered in multiple **AC** columns, the top line is selected.
S/N	Storage system serial number
Device Address Domain ID	Device address domain ID

In the initial state, the information is displayed in order by ascending EBCDIC code, prioritized as follows: **S/N**, and then **Device Address Domain ID**.

If `s` is specified in the **AC** column and the **Enter** key is pressed, the disk configuration definition file is loaded and the `Model` and `IFType` values are fetched. At this point, if `DKC` is not specified in the **Type** column in the Edit Logical Path Definition panel, the Select SSID panel is displayed for displaying a list of control units in the storage system on the selected line.

Select SSID panel

The Select SSID panel displays a list of control units in storage systems.

```
                                 Select SSID                 Row 1 to 10 of 10
Command ===> ____________________________________________ Scroll ===> PAGE

                                                        2008/02/28 16:45:12
Supported action: s(Select)

AC  CU  SSID
_   00  2350
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Select SSID panel.

Item	Description
AC	Specify an action: • s: Selects a CU and SSID. When actions are entered in multiple **AC** columns, the top line is specified.
CU	Control unit number
SSID	SSID

In the initial state, the information is displayed in ascending order by EBCDIC codes in **CU**.

Edit Port Definition panel

In the Edit Port Definition panel, you can edit physical paths.

```
                              Edit Port Definition              Row 1 to 1 of 1
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                          2019/02/28 16:49:43
Supported action: d(Delete)
Path Set ID  . . . : TESTPATH
Description  . . . : TEST PATH 1

            S/N      Model     IFType  PathID  CU  SSID
Primary . : 14002    VSP5100   5050            00  2340
Secondary : 14001    VSP5500   5050            00  2350

    -------- Port ---------
AC  Primary  Dir  Secondary
_   04       ->   05
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F5=Add       F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Edit Port Definition panel.

Item		Description
Path Set ID		Path set ID
Description		A description of the path set
Primary	**S/N**	Serial number of the primary storage system
	Model	Model of the primary storage system
	IFType	Primary interface version
	PathID	Primary path group ID (path group ID in the forward direction)
	CU	Primary control unit number
	SSID	Primary SSID
Secondary	**S/N**	Serial number of the secondary storage system

Item		Description
	Model	Model of the secondary storage system
	IFType	Secondary interface version
	PathID	Secondary path group ID (path group ID in the reverse direction)
	CU	Secondary control unit number
	SSID	Secondary SSID
AC		Specify an action. • `d`: Deletes a physical path. When actions are entered in multiple **AC** columns, each is processed in the order displayed.
Port	**Primary**	Port number of the physical path of the primary site
	Dir	Direction of the path
	Secondary	Port number of the physical path of the secondary site

In the initial state, the information is displayed in ascending order by hexadecimal code, in priority order as follows: **Primary** and then **Secondary** for **Port**.

Assign Port panel

In the Assign Port panel, you can assign new physical paths.

```
                Assign Port
Command ===> ______________________________

Enter the Port to assign:

Primary   Port Number . . __
Secondary Port Number . . __

 F1=Help       F12=Cancel
```

The following table lists and describes the items in the Assign Port panel.

Item	Description
Primary Port Number	Specify the port number of the Primary site.
Secondary Port Number	Specify the port number of the Secondary site.

Sort Logical Paths in the Path Set panel

In the Sort Logical Paths in the Path Set panel, you can specify a sort key for displaying logical paths.

```
                    Sort Logical Paths in the Path Set
Command ===> ____________________________________________________________

Enter priority number(1-7) and press ENTER key to sort.
```

```
Priority  sort-key
_         Primary   Serial Number
_         Primary   CU
_         Primary   PathID
_         Secondary Serial Number
_         Secondary CU
_         Secondary PathID
_         Path Type

 F1=Help    F12=Cancel
```

The following table lists and describes the items in the Sort Logical Paths in the Path Set panel.

Item	Description
Priority	Specify a number representing the position of this path according to the order of its sort key as specified in the **sort-key** column.
sort-key	Sort key for sorting logical paths within the path set: • **Primary Serial Number**: By order of serial number of the primary storage system. • **Primary control unit**: By order of primary control unit number. • **Primary PathID**: By order of primary path group ID. • **Secondary Serial Number**: By order of serial number of the secondary storage system. • **Secondary control unit**: By order of secondary control unit number. • **Secondary PathID**: By order of secondary path group ID. • **Path Type**: By order of path type (EBCDIC code order).

When an ordering priority is specified in the **Priority** column and the **Enter** key is pressed, the logical paths in the path set are sorted, the Path Set Detail panel is redisplayed, and the system returns to the Path Set Detail or Path Set Status panels.

Panel transition from the Copy Group Selection List panel

This section describes panel transitions from the Copy Group Selection List panel.

When creating a copy group

The following figure shows the panel transitions when **F5=Add** is pressed at the Copy Group Selection List panel, or when `SCANPAIR` is entered on the command line, and then the **Enter** key is pressed.

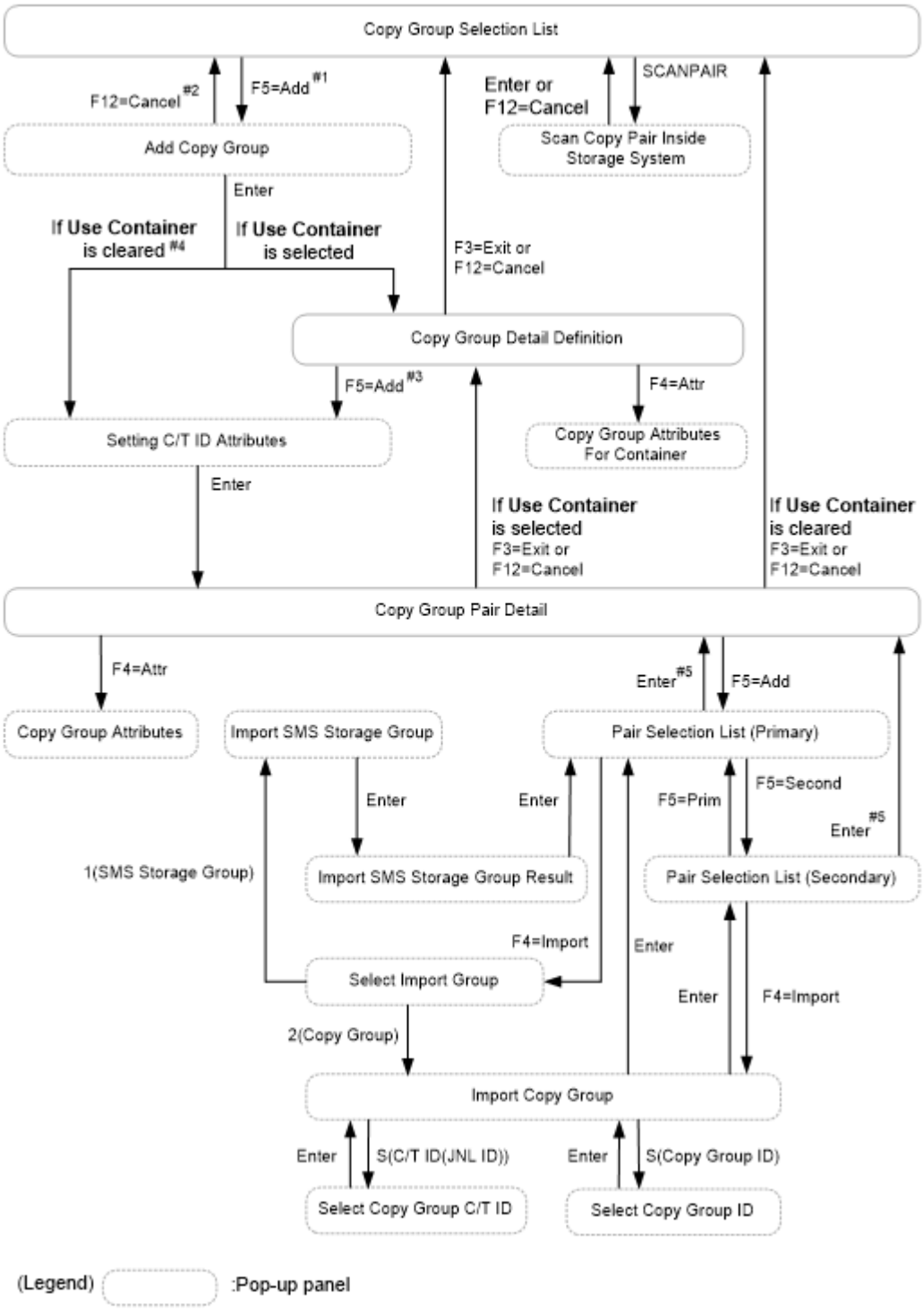


Figure 1-7 Panel transition from the Copy Group Selection List panel (Create Copy Group)

#1: After the Copy Group Detail Definition panel is displayed, the Add Copy Group panel is displayed on that panel.

#2: If you press the **F12=Cancel** key, the Copy Group Detail Definition panel also closes.

#3: After the Copy Group Pair Detail panel is displayed, the Setting C/T ID Attributes panel is displayed on that panel.

#4: After the Copy Group Pair Detail panel is displayed, the Setting C/T ID Attributes panel is displayed on that panel.

#5: If the number of P-VOLs and S-VOLs does not match, pressing the **Enter** key does not change the pop-up panel that is currently displayed.

When browsing copy group information

The following figure shows the panel transitions when `b` is specified for **AC** in the Copy Group Selection List panel.

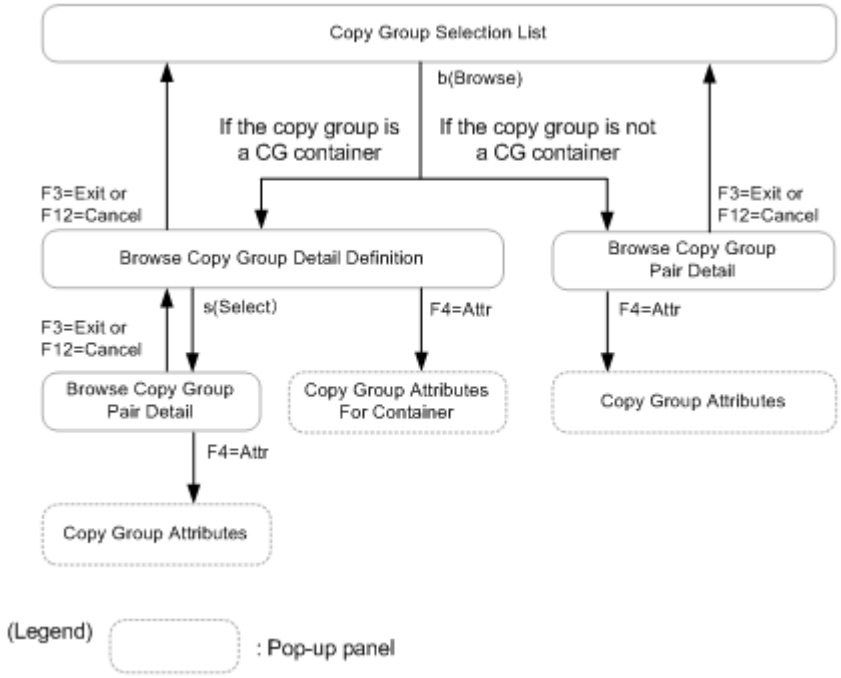


Figure 1-8 Panel transition from the Copy Group Selection List panel (Browse Copy Group Information)

When updating a copy group

The following figure shows the panel transitions when `e` is specified for **AC** in the Copy Group Selection List panel.

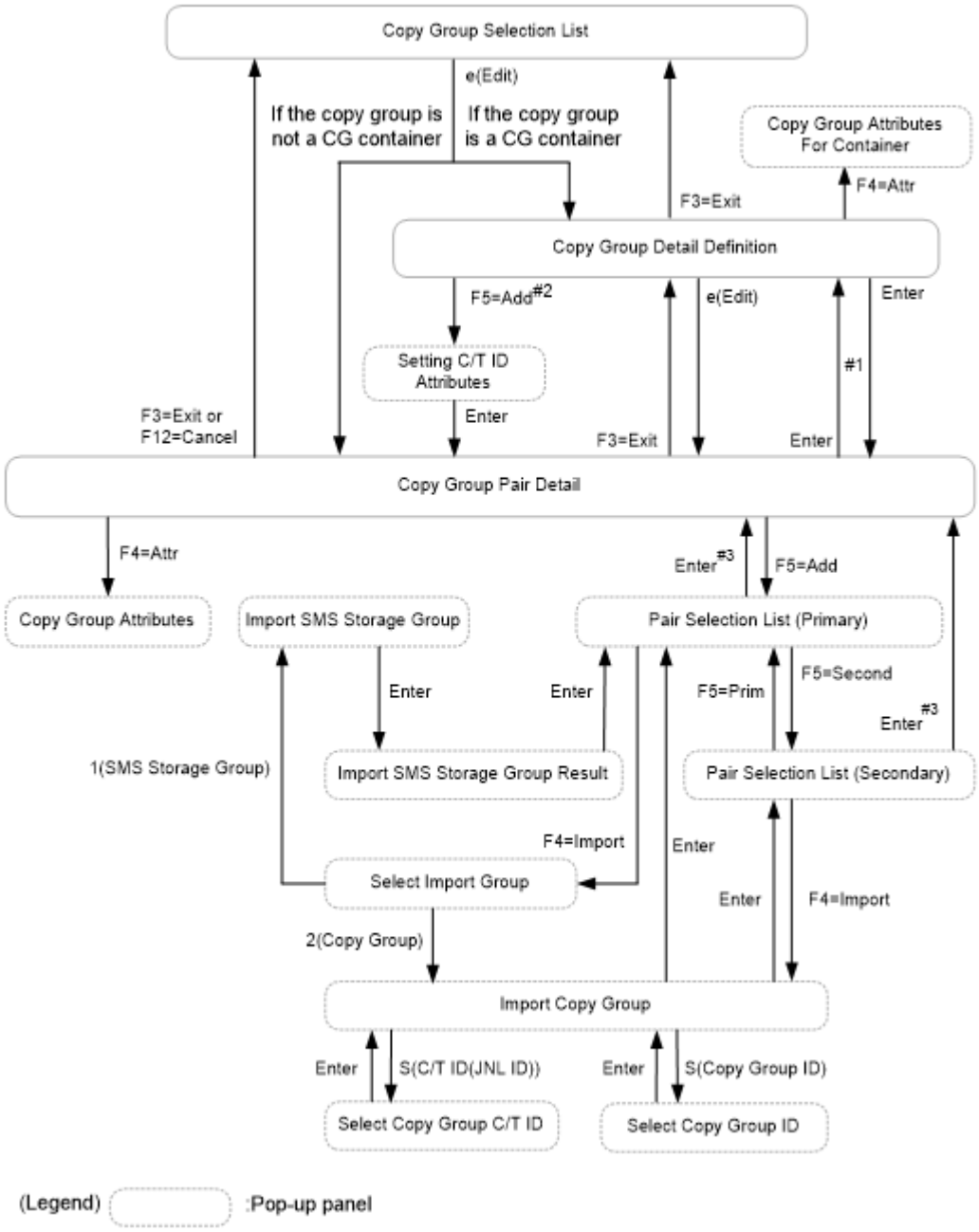


Figure 1-9 Panel transition from the Copy Group Selection List panel (Update Copy Group)

#1: The displayed panel changes if the specification for whether to make the copy group a copy group container (**Use Container** checkbox) is changed.

#2: After the Copy Group Pair Detail panel is displayed, the Setting C/T ID Attributes panel is displayed on that panel.

#3: If the numbers of P-VOLs and S-VOLs does not match, pressing the **Enter** key does not change the pop-up panel that is currently displayed.

Copy Group Selection List panel

The Copy Group Selection List panel displays a list of copy group IDs.

```
                          Copy Group Selection List          Row 1 to 14 of 16
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                            2008/03/04 10:46:24
Supported actions: b(Browse), e(Edit), d(Delete)

AC Copy Group ID ------------------------  Description --------------------
_  CG.SI                                   COPY GROUP 1
_  CG.TC                                   COPY GROUP 2
_  CG.TC1                                  COPY GROUP 3
_  CG.UR                                   COPY GROUP 4
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F4=Refresh   F5=Add       F7=Backward  F8=Forward
F12=Cancel
```

The following table lists and describes the items in the Copy Group Selection List panel.

Item	Description
AC	Specify an action. • `b`#: Displays a copy group. If the copy group is not a copy group container, the Browse Copy Group Pair Detail panel is displayed. If the copy group is a copy group container, the Browse Copy Group Detail Definition panel is displayed. • `e`#: Edits a copy group. If the copy group is not a copy group container, the Copy Group Pair Detail panel is displayed. If the copy group is a copy group container, the Copy Group Detail Definition panel is displayed. • `d`: Deletes a copy group.
Copy Group ID	Copy group ID
Description	A description of the copy group

#: An error occurs if an attempt is made to display or edit, a copy group definition file that was not created by Business Continuity Manager.

Note:

- When you enter an action in the **AC** column, complete the action by pressing the **Enter** key, and then perform the next operation.
- When the target copy group is being copied (with a copy pair other than `SIMPLEX`), the copy pair is not dissolved even if `d` is specified in **AC** in order to delete the copy group definition file. When the target copy group definition file is deleted without releasing the copy pair, subsequent operations for the copy pair can no longer be performed. Before specifying `d` in **AC**, make sure that the copy operation for the copy group has stopped (the copy pair has been dissolved).

Add Copy Group panel

In the Add Copy Group panel, you can define new copy groups.

If you press the **Enter** key when **Use Container** is cleared, the Copy Group Pair Detail panel is first displayed, and then the Setting C/T ID Attributes panel appears. In this panel, you can define a consistency group ID. If you select **Use Container** and press the **Enter** key, the Copy Group Detail Definition panel is first displayed, and then the Setting C/T ID Attributes panel appears. In this panel, you can define a consistency group ID. If you enter a new copy group ID in the Add Copy Group panel and press the **F12=Cancel** key, display returns to the Copy Group Selection List panel, and no new copy group is registered.

```
                         Add Copy Group
Command ===> ____________________________________________________

Copy Group ID  . . . ________________________________________
Device Address Domain,
  Primary  . . . . . ______________________________
  Secondary  . . . . ______________________________
Subchannel set ID,
  Primary  . . . . . 0
  Secondary  . . . . 0
Copy Group Type  . . ___                        _  Use Container

Double check Device Address Domain ID values before proceeding.
Press Enter to create the Copy Group, Cancel to cancel.

 F1=Help     F12=Cancel
```

The following table lists and describes the items in the Add Copy Group panel.

Item	Description
Copy Group ID	Specify the copy group ID to be added.#1
Device Address Domain, Primary	Specify the primary device address domain ID.#1
Device Address Domain, Secondary	Specify the secondary device address domain ID.#1 If the copy type is ShadowImage (SI), specify the same value as specified in **Device Address Domain, Primary**. When defining a Non Gen'ed volume and a Gen'ed volume inside the same storage system as a ShadowImage (SI) copy pair, specify respective values (the device address domain ID specified for an NG scan and the device address domain ID specified for a local scan).
Copy Group Type	Specify the copy type of the copy group (either `SI`, `TC`, or `UR`).
Use Container	Select **Use Container** to define a copy group as a copy group container. Clear **Use Container** to not define the copy group as a copy group container.
Subchannel set ID, Primary	Specify the primary subchannel set ID as a 1-digit hexadecimal value#2. (The default is `0`.)
Subchannel set ID, Secondary	Specify the secondary subchannel set ID as a 1-digit hexadecimal value#2. (The default is `0`.)

#1: For details about the characters and maximum length that can be specified, see Names of configuration files on page 3-2.

#2: For multiple subchannel set IDs, specify a value in the range from 1 to 3. For dummy subchannel set IDs, specify a value from 1 to F.

When a copy group is defined, a copy group definition file is created. For details about the name of the created copy group definition file, see Names of configuration files on page 3-2.

Copy Group Detail Definition panel

In the Copy Group Detail Definition panel, you can edit copy groups by the consistency groups included in the copy group container.

```
                         Copy Group Detail Definition          Row 1 to 1 of 1
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                        2008/03/04 10:59:06

Copy Group Type : UR   Copy Group ID : GRP1UR2
Description  . . . . . . . . . . . . . COPY GROUP 5_____________________
Primary Device Address Domain  . . . : SF
Secondary Device Address Domain  . . : LA
  /  Enable EXCTG Attributes      EXCTG ID(Forward) 0     EXCTG ID(Reverse) 0
--------------------------------------------------------------------------------
Supported actions: e(Edit), d(Delete)                       /  Use Container
      Grp  C/T  ID           Primary -----------  Secondary ---------  Path ID
AC    Num      sub  Pair(s)  S  S/N      ArbCdev  S  S/N      ArbCdev
_       1  0C  0C         1  S  14002    ____     _  14001    ____          00
****************************** Bottom of data ******************************

 F1=Help      F3=Exit      F4=Attr      F5=Add       F6=Sort      F7=Backward
 F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Copy Group Detail Definition panel. Note that changes for each item will be applied to the storage system settings when the copy pair is reloaded (by executing the YKLOAD command) and then created.

For TrueCopy copy pairs with the HyperSwap attribute, because Business Continuity Manager cannot perform copy pair operations, if you change the definitions of the items that require the YKMAKE command to make changes, the changes will not be applied to the storage system settings.

Item	Description	When effective
Copy Group Type	Copy type of the copy group	When the YKMAKE command is executed#1
Copy Group ID	Copy group ID	N/A
Description	A description of the copy group. (Can be edited.)	N/A
Primary Device	Primary device address domain ID	N/A

Item	Description	When effective
Address Domain		
Secondary Device Address Domain	Secondary device address domain ID	N/A
Enable EXCTG Attributes	Specify `/` to define an EXCTG attribute.#2 This is only effective when the copy type is Universal Replicator; if the copy type is other than Universal Replicator, an error message is displayed.	When the `YKMAKE` command is executed#1
EXCTG ID(Forward)	Specify an EXCTG ID (`0` to `3`) for copying in the forward direction.	When the `YKMAKE` command is executed#1
EXCTG ID(Reverse)	Specify an EXCTG ID (`0` to `3`) for copying in the reverse direction.	When the `YKMAKE` command is executed#1
Use Container	Select to define a container. This checkbox cannot be cleared if there are multiple copy groups.	When the `YKMAKE` command is executed#1
AC	Specify an action. • `e`: Edits a copy pair in the copy group. This setting displays the Copy Group Pair Detail panel (this setting can be specified only in the Copy Group Detail Definition panel). • `d`: Deletes a copy group (this setting can be specified only in the Copy Group Detail Definition panel). • `s`: Displays a copy pair in the copy group. This setting displays the Browse Copy Group Pair Detail panel (this setting can be specified only in the Browse Copy Group Detail Definition panel).	N/A
Grp Num	Group ID number of the copy group This value corresponds to the value of *n* in `CopyGroup.`*n*`.` ... of the copy group structure.	N/A
C/T ID	Specify the consistency group ID (hexadecimal). This option cannot be specified for TrueCopy copy groups with the HyperSwap attribute.	When the `YKMAKE` command is executed#1
sub	Specify the sub consistency group ID (hexadecimal).	When the `YKMAKE` command is executed#1
Pair(s)	The number of copy pairs in the applicable consistency group.	N/A

Item		Description	When effective
Primary	**S**	Specify `S` to register a storage system as the supervisor disk controller. You can only specify this for one storage system in a primary site.	When the `YKMAKE` command is executed#1
	S/N	Serial number of the primary storage system If multiple storage systems exist for one C/T ID and sub C/T ID combination, `*` is displayed to the right of the serial number.	N/A
	ArbCdev	Specify the arbitration command device number (a combination of the control unit and LDEV numbers of the remote command device for the arbitration command device) of the primary site. You do not have to specify this item for the supervisor disk controller. If 17 or more journal groups are to be registered for one storage system, at least one arbitration command device is necessary for each group of 16 journal groups.	When the `YKMAKE` command is executed#1
Secondary	**S**	Specify `S` to register a storage system as the supervisor disk controller. You can only specify this for one storage system in a secondary site.	When the `YKMAKE` command is executed#1
	S/N	Serial number of the secondary storage system If multiple storage systems exist for one C/T ID and sub C/T ID combination, `*` is displayed to the right of the serial number.	N/A
	ArbCdev	Specify the arbitration command device number (a combination of the control unit and LDEV numbers of the remote command device for the arbitration command device) of the secondary site. You do not have to specify this item for the supervisor disk controller. If 17 or more journal groups are to be registered for one storage system, at least one arbitration command device is necessary for each group of 16 journal groups.	When the `YKMAKE` command is executed#1
Path ID		Specify the path group ID (hexadecimal).	When the `YKMAKE` command is executed#1

#1: Unless all volumes are `SIMPLEX`, execution might not be executed properly.

#2: Even if you disable EXCTG in the definition, it is not actually disabled on the storage system until the `YKMAKE` command is re-executed.

Before changing the definition, execute the `YKDELETE` command to dissolve the copy group.

If you press the **F5=Add** key, the Copy Group Pair Detail panel (in which the copy pair is not defined) is displayed, and then the Setting C/T ID Attributes panel appears. In this panel, you can define a consistency group ID.

If you clear **Use Container** and press the **Enter** key when only one copy group is displayed, the Copy Group Pair Detail panel appears. In this panel, you can change the copy group so that it is no longer a copy group container.

If you press the **F4=Attr** key, the Copy Group Attributes For Container panel appears. In this panel, you can define attributes of copy group containers. For details about the Copy Group Attributes For Container panel, see Copy Group Attributes panel and Copy Group Attributes For Container panel on page 1-74.

If you create a copy group or change the definition by pressing the **F3=Exit** key, a copy group that is not a copy group container will be created when both of the following conditions are satisfied:

- When only one consistency group exists in a copy group.
- When **Enable EXCTG Attributes** is not selected.

If you press the **F6=Sort** key, the Sort Copy Group Container panel appears. In this panel, you can specify the order for displaying copy group containers. For details about the Sort Copy Group Container panel, see Sort Copy Group Container panel on page 1-94.

You can use the `SORT` command in the Copy Group Detail Definition panel. For details about how to use the `SORT` command, see Commands that can be used in the ISPF panels on page 1-4.

Copy Group Attributes panel and Copy Group Attributes For Container panel

In the Copy Group Attributes panel or Copy Group Attributes For Container panel, you can define the copy group attributes.

The Copy Group Attributes panel that is actually displayed depends on a combination of the copy type of the copy group that is being defined, and on whether the copy group is a copy group container. The following table indicates which panel is displayed for each combination:

Copy type	Copy group container?	Displayed panel
ShadowImage	Yes	Copy Group Attributes For Container (SI)
	No#	Copy Group Attributes (SI)
TrueCopy	Yes	Copy Group Attributes For Container (TC)
	No#	Copy Group Attributes (TC)
Universal Replicator	Yes	Copy Group Attributes For Container (UR)
	No	Copy Group Attributes (UR)

#: Including when no consistency group ID is specified.

Copy Group Attributes For Container (SI) panel (for ShadowImage copy groups that are copy group containers)

```
           Copy Group Attributes For Container (SI)
Command ===> ____________________________________________________

         COPY PACE . . . . . . NORMAL    (SLOW, NORMAL or FAST)
         PROT MODE . . . . . . PERMIT    (PROTECT or PERMIT)
         Preset Mode . . . . . 1  1.NORMAL
                                  2.UR(STEADY)
                                  3.UR(QUICK)

 F1=Help     F12=Cancel
```

Copy Group Attributes (SI) panel (for ShadowImage copy groups that are not copy group containers)

```
                   Copy Group Attributes (SI)
Command ===> ____________________________________________________

         C/T ID  . . . . . . . 0C        (2-digit Hexadecimal)
         COPY PACE . . . . . . NORMAL    (SLOW, NORMAL or FAST)
         PROT MODE . . . . . . PERMIT    (PROTECT or PERMIT)
         Preset Mode . . . . . 1  1.NORMAL
                                  2.UR(STEADY)
                                  3.UR(QUICK)

 F1=Help     F12=Cancel
```

Copy Group Attributes For Container (TC) panel (for TrueCopy copy groups that are copy group containers)

```
           Copy Group Attributes For Container (TC)
Command ===> ____________________________________________________

         COPY PACE  . . . NORMAL    (NORMAL or SLOW)
         PROT MODE  . . . PROTECT   (PROTECT or PERMIT)
         FENCE LVL  . . . NEVER     (DATA, STATUS or NEVER)
         FREEZE SCP . . . Y         (N or Y)
         TIMESTAMP  . . . N         (N or Y)
         DIF UNIT . . . . TRK       (CYL or TRK)
         OPEN/MF  . . . . N         (N or Y)

 F1=Help     F12=Cancel
```

Copy Group Attributes (TC) panel (for TrueCopy copy groups that are not copy group containers)

```
                   Copy Group Attributes (TC)
Command ===> ____________________________________________________

         Linkage Option . . NONE      (NONE or HS)

         C/T ID . . . . . . __        (2-digit Hexadecimal)
         COPY PACE  . . . . NORMAL    (NORMAL or SLOW)
         PROT MODE  . . . . PROTECT   (PROTECT or PERMIT)
```

```
          FENCE LVL  . . . . NEVER     (DATA, STATUS or NEVER)
          FREEZE SCP . . . . Y         (N or Y)
          TIMESTAMP  . . . . N         (N or Y)
          DIF UNIT . . . . . TRK       (CYL or TRK)
          OPEN/MF  . . . . . N         (N or Y)

 F1=Help     F12=Cancel
```

Copy Group Attributes For Container (UR) panel (for Universal Replicator copy groups that are copy group containers)

```
           Copy Group Attributes For Container (UR)
Command ===> ____________________________________________________

     MIRROR ID . . . . . . 1          (Decimal)
     ERROR LVL . . . . . . GROUP      (GROUP or VOLUME)
     PROT MODE . . . . . . PROTECT    (PROTECT or PERMIT)
     C/T TIME MODE . . . . ASIS       (JOURNAL, VOLUME or ASIS)


 F1=Help     F12=Cancel
```

Copy Group Attributes (UR) panel (for Universal Replicator copy groups that are not copy group containers)

```
                  Copy Group Attributes (UR)
Command ===> ____________________________________________________

     C/T ID (JNLG) . . . . 09         (2-digit Hexadecimal)
     Sub C/T ID (JNLG) . . 0B         (2-digit Hexadecimal)
     Path ID . . . . . . . 00         (2-digit Hexadecimal)
     MIRROR ID . . . . . . 1          (Decimal)
     ERROR LVL . . . . . . GROUP      (GROUP or VOLUME)
     PROT MODE . . . . . . PROTECT    (PROTECT or PERMIT)
     C/T TIME MODE . . . . ASIS       (JOURNAL, VOLUME or ASIS)


 F1=Help     F12=Cancel
```

The following table lists and describes the items in the Copy Group Attributes panel. Note that if you change any of these items, the change does not take effect until the next time you perform an operation on the copy pair after reloading it by using the `YKLOAD` command. The following table shows when a change made to the copy group attribute definition takes effect.

Note: Because Business Continuity Manager cannot perform copy pair operations if `HS` is specified for **Linkage Option**, changes you make to the definitions of the items that require the `YKMAKE` or `YKRESYNC` command will not be applied to the storage system settings.

Item	Description	Copy type	When effective
Linkage Option	Displays the linkage option. • `HS`: This is a TrueCopy copy group with the HyperSwap attribute.	TrueCopy	--#1

Item	Description	Copy type	When effective
	• NONE: This is something other than the above. For PPRC copy pairs in a 2DC configuration with HyperSwap and Universal Replicator, specify HS. If this is a TrueCopy copy group created by executing the YKH2B command, HS is displayed. If HS is displayed, Business Continuity Manager can only be used for monitoring, and cannot perform any operations.#2		
C/T ID	Specify the consistency group ID. Specify a hexadecimal number between 00 and 7F. This value depends on the type of storage system. This option cannot be specified for TrueCopy copy groups with the HyperSwap attribute.	• ShadowImage • TrueCopy	When the YKMAKE command is executed#3
C/T ID (JNLG)	Specify the journal ID of the Primary site as a consistency group ID (required). Specify a value between 00 and FF.	Universal Replicator	When the YKMAKE command is executed#3
Sub C/T ID (JNLG)	Specify the journal ID of the Secondary site as a sub consistency group ID (required). Specify a value between 00 and FF. Note: For configurations that use delta resync, specify the same value for both the Universal Replicator copy pair and the Universal Replicator copy pair for delta resync.	Universal Replicator	When the YKMAKE command is executed#3
Path ID	Specify the path group ID. Specify a value between 00 and FF.	Universal Replicator	When the YKMAKE command is executed#3
MIRROR ID	Specify the Mirror ID in the range from 0 to 3 (required for Universal Replicator)#4.	Universal Replicator	When the YKMAKE command is executed#3
FENCE LVL	Specify the fence level (required for TrueCopy). • DATA: Places P-VOL in fence status (updates suppressed) when updates in P-VOL cannot be copied to S-VOL due to a problem such as a failure. • STATUS: Places P-VOL in fence status (updates suppressed) when updates in P-VOL cannot be copied to S-VOL due to a problem such as a failure. If the operation from the	TrueCopy	• When the YKMAKE command is executed • When the YKRESYNC command is executed

Item	Description	Copy type	When effective
	primary site attains the suspend status, updates to P-VOL are accepted. • NEVER: P-VOL is never in fence status (updates suppressed). When a copy pair is suspended, updates to P-VOL are accepted. Note 1: **FENCE LVL** cannot be altered when a consistency group ID is specified. Note 2: For the system volume that is used for control by the OS or applications such as Business Continuity Manager, if you specify DATA or STATUS for **FENCE LVL** to create a copy pair and operate the system, write to P-VOL is prohibited and the OS or application might hang when a problem such as a failure occurs. For that reason, if you use the system volume as a TrueCopy copy pair, specify NEVER for **FENCE LVL** or set the system volume itself not to TrueCopy copy the pair and use it.		
FREEZE SCP	Specify whether to freeze a storage system (place in SCP status) when a failure suspension (SUSPER) occurs. • Y: Place in SCP status#5. • N: Do not place in SCP status.	TrueCopy	When the YKMAKE command is executed
ERROR LVL	Specify the error level that determines whether all of the copy pairs in the same consistency group are suspended (required for Universal Replicator). • VOLUME: When a failure occurs, only the affected volumes are suspended. • GROUP: When a failure occurs, all volumes in the same copy group are suspended.	• Universal Replicator	• When the YKMAKE command is executed • When the YKRESYNC command with the VOLUNIT parameter or DEVN parameter specified is executed
DIF UNIT	Specify a unit to manage the differential data between P-VOL data and S-VOL data (differential-data management unit). • CYL: Manages by cylinder unit • TRK: Manages by track unit Note: • If TRK is specified, there is a limit to the number of copy pairs that can be created on each storage system.	• TrueCopy	When the YKMAKE command is executed

Item	Description	Copy type	When effective
	For details, see the *TrueCopy for Mainframe User Guide*. • If you specify a blank space, operations use the CYL unit. • For VSP G1000, VSP G1500, VSP F1500, or VSP 5000 series, operations use the TRK unit even if CYL is specified.		
Preset Mode	Specify the number corresponding to the ATTIME Suspend function and suspend mode you want to use when setting an ATTIME suspend time. • NORMAL: Uses the NORMAL ATTIME Suspend function. • UR(STEADY): Uses the UR ATTIME Suspend function. The suspension is activated in STEADY mode. • UR(QUICK): Uses the UR ATTIME Suspend function. The suspension is activated in QUICK mode.	ShadowImage	When the YKSUSPND command is executed
COPY PACE	Specify the copy pace when creating a copy pair (YKMAKE command) or resynchronizing a copy pair (YKRESYNC command).#8 • SLOW: Slows the speed of the copy operation so that the effect of the copy operation on the I/O performance of the host is minimal. • NORMAL: The speed of the copy operation improves. However, update I/O load on P-VOL is high, and this might affect the I/O performance of the host. • FAST: Specifying FAST speeds up the copy operation so that it is faster than NORMAL. However, specifying FAST adversely affects the I/O performance of the host. Because specifying FAST might adversely affect business operations, we recommend that you perform copy pair operations outside of business hours.	• ShadowImage • TrueCopy	• When the YKMAKE command is executed • When the YKRESYNC command is executed
PROT MODE	Specify the write-protect mode for the S-VOL (required). For ShadowImage, PERMIT is the default. For TrueCopy, PROTECT is the default. • PROTECT: Update of the S-VOL is prohibited after a copy pair is	• ShadowImage • TrueCopy • Universal Replicator	When the YKSUSPND command is executed

Item	Description	Copy type	When effective
	suspended (YKSUSPND command is executed). • PERMIT: Update of the S-VOL is allowed after a copy pair is suspended (YKSUSPND command is executed).		
C/T TIME MODE	Specify the consistency time mode to be used when the copy type is Universal Replicator. • JOURNAL: Uses the consistency time committed to the restore journal. • VOLUME: Uses the consistency time committed to the S-VOL. • ASIS: Uses the consistency time set according to the storage system setting.	Universal Replicator	When the YKQUERY command is executed
TIMESTAMP	Specify whether to transfer the writing timestamp to the S-VOL when the copy type is TrueCopy (timestamp transfer mode). • Y: Transfers the timestamp to the S-VOL. Specify this item only when you are using the UR ATTIME Suspend function in a 4x4x4 Cascade configuration or a 3DC Cascade configuration. • N: Does not transfer the timestamp to the S-VOL.	TrueCopy	• When the YKMAKE command is executed • When the YKRESYNC command is executed
OPEN/MF	Specify whether the Open/MF Consistency Preservation function is to be used when the copy type is TrueCopy. Y: Uses the Open/MF Consistency Preservation function (Open/MF Consistency attribute setting). N: Does not use the Open/MF Consistency Preservation function.	TrueCopy	• When the YKMAKE command is executed • When the YKRESYNC command is executed (with OPENMFUPDATE specified)

#1: Although you can change the definitions in Business Continuity Manager by specifying HS or NONE for **Linkage Option**, the changes will not be applied to the host and storage system. If the definitions are changed on the host or in the storage system, make sure that you change the definitions in Business Continuity Manager so that they match the definitions on the host and in the storage system.

#2: Business Continuity Manager can dissolve copy pairs (by executing the YKRECVER or YKDELETE command).

#3: If not all of the volume statuses are SIMPLEX, processing might not execute correctly.

#4: Do not specify `0` for **MIRROR ID** when using a Universal Replicator copy group and a TrueCopy copy group in either the 3DC Cascade configuration or the 3DC Multi-Target configuration. Note also that when a 3DC Multi-Target configuration or a 2DC configuration with HyperSwap and Universal Replicator is used, the mirror ID cannot be the same as any other mirror ID assigned to another Universal Replicator copy group.

#5: When a copy group in which `Y` is set to **FREEZE SCP** changes to a failure suspension status, execute the `YKRUN` command to cancel the SCP status. If you do not cancel SCP status, the update I/O flow from the host is held for a long period of time. You cannot use the SCP delay time that was set using Storage Navigator to change the hold period for update I/O. Specification of `Y` is valid only for a TrueCopy copy group for which a consistency group ID is specified.

#6: For details on the consistency group timer type, see the *TrueCopy for Mainframe User Guide*.

#7: When executing the `YKRESYNC` command, specify the `VOLUNIT` or `DEVN` parameter.

#8: If you specify the `COPYPACE` parameter when executing the `YKMAKE` or `YKRESYNC` command, the value specified for the `COPYPACE` parameter becomes valid.

If the **Enter** key is pressed before all required attributes have been specified, an error message is displayed.

The following table indicates the default values for each copy type:

Copy type	Default value
ShadowImage	**COPY PACE**=`NORMAL` **PROT MODE**=`PERMIT`
TrueCopy	**Linkage Option**=`NONE` **FENCE LVL**=`NEVER` **FREEZE SCP**=`Y` **DIF UNIT**=`TRK` **COPY PACE**=`NORMAL` **PROT MODE**=`PROTECT` **TIMESTAMP**=`N` **OPEN/MF**=`N`
Universal Replicator	**Path ID**=`00` **MIRROR ID**=`1` **ERROR LVL**=`GROUP` **PROT MODE**=`PROTECT` **C/T TIME MODE**=`ASIS`

Setting C/T ID Attributes panel

In the Setting C/T ID Attributes panel, you can define the consistency group IDs of copy groups.

```
                    Setting C/T ID Attributes
Command ===> ____________________________________________________

         C/T ID (JNLG) . . . . __   (2-digit Hexadecimal)
         Sub C/T ID (JNLG) . . __   (2-digit Hexadecimal)
         Path ID . . . . . . . 00   (2-digit Hexadecimal)


 F1=Help     F12=Cancel
```

The following table lists and describes the items in the Setting C/T ID Attributes panel.

Item	Description	Specifiable copy types
C/T ID (JNLG)	If the copy type is ShadowImage or TrueCopy specify the consistency group ID. Specify a value between `00` and `7F` (depending on the storage system type). If the copy type is Universal Replicator, specify the journal ID of the primary site as the consistency group ID (required for Universal Replicator). Specify a value between `00` and `FF`.	• ShadowImage • TrueCopy • Universal Replicator
Sub C/T ID (JNLG)	Specify the journal ID of the secondary site as the sub consistency group ID (required for Universal Replicator). Specify a value between `00` and `FF`. Note: For configurations that use delta resync, specify the same value for both the Universal Replicator copy pair and the Universal Replicator copy pair for Delta Resync.	Universal Replicator
Path ID	Specify the path group ID. Specify a value between `00` and `FF`.	Universal Replicator

If the copy type is ShadowImage (SI) or TrueCopy (TC) specifying a value in **C/T ID (JNLG)** and then pressing the **Enter** key displays the Copy Group Pair Detail panel. If the copy type is Universal Replicator, specifying a value in **C/T ID (JNLG)** and **sub C/T ID (JNLG)** and then pressing the **Enter** key displays the Copy Group Pair Detail panel.

Copy Group Pair Detail panel

The Copy Group Pair Detail panel displays details of copy pairs in a copy group.

```
                         Copy Group Pair Detail
Command ===> ____________________________________________________ Scroll ===> PAGE
```

```
                                                          2017/11/20 11:10:27

Copy Group ID : CG.UR                                     _  Use Container
Description . . _________________________________
Copy Group Type : UR   Primary SCHSET : 0  Secondary SCHSET : 0
-------------------------------------------------------------------------------
Supported actions: d(Delete)
AC   Grp VOLSER  Pri: SF--------------        Sec: LA--------------        CYL
     Num         Devn - SN --  SSID  CU  CCA  Devn - SN --  SSID  CU  CCA
_      1         0F23   53038  000D  08  23-  1123   53039  000E  08  23-
******************************** Bottom of data ********************************

 F1=Help      F3=Exit      F4=Attr      F5=Add       F6=Sort      F7=Backward
 F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Copy Group Pair Detail panel.

Item		Description
Copy Group ID		Copy group ID
Use Container		If the copy group is a copy group container, **Use Container** is selected. You cannot clear this checkbox if the copy group is a copy group container.
Description		A description of the copy group. (Can be edited.)
Copy Group Type		The copy type of the copy group
AC		Specify an action. • `d`: Deletes the copy pair.
Primary SCHSET		Primary subchannel set ID
Secondary SCHSET		Secondary subchannel set ID
Grp Num		Group ID of the consistency group This value corresponds to the value of *n* in `CopyGroup.`*n*`.` ... of the copy group structure.
VOLSER		Volume serial number
Pri		Primary device address domain ID
Pri	**Devn**	Device number (modifiable)
	SN	Storage system serial number
	SSID	SSID
	CU	Control unit number
	CCA	The two leftmost characters indicate the command control address of the device in hexadecimal. The rightmost character indicates, as follows, whether the command control address is an external volume. • `+`: An external volume • `-`: Not an external volume • Blank: The volume attribute is unknown.

Item		Description
Sec		Secondary device address domain ID
Sec	**Devn**	Device number (modifiable)
	SN	Storage system serial number
	SSID	SSID
	CU	Control unit number
	CCA	The two leftmost characters indicate the command control address of the device in hexadecimal. The rightmost character indicates, as follows, whether the command control address is an external volume. • `+`: An external volume • `-`: Not an external volume • Blank: The volume attribute is unknown.
CYL		Displays the result of comparing the P-VOL and S-VOL capacities. • `P`: Displayed if the P-VOL capacity is larger than the S-VOL capacity • `S`: Displayed if the S-VOL capacity is larger than the P-VOL capacity • `N/A`: Displayed if the capacity of the P-VOL or S-VOL or the capacities of both the P-VOL and S-VOL cannot be obtained • Blank: Indicates that the capacities of the P-VOL and S-VOL are the same

You can define copy pairs from this panel. Specify a P-VOL of a copy pair in the Pair Selection List (Primary) panel that appears when you press the **F5=Add** key. Specify an S-VOL of a copy pair in the Pair Selection List (Secondary) panel that appears when you press the **F5=Second** key. For details about the Pair Selection List (Primary) panel, see Pair Selection List (Primary) panel on page 1-85. For details about the Pair Selection List (Secondary) panel, see Pair Selection List (Secondary) panel on page 1-91.

If you press the **F12=Cancel** key while you are defining a new copy pair, and the copy group is not a copy group container, display returns to the Copy Group Selection List panel. If the copy group is a copy group container when you press the **F12=Cancel** key, display returns to the Copy Group Detail Definition panel.

If you press the **F4=Attr** key, the Copy Group Attributes panel appears. In this panel, you can define the copy group attributes. For details about the Copy Group Attributes panel, see Copy Group Attributes panel and Copy Group Attributes For Container panel on page 1-74.

If you press the **F6=Sort** key, the Sort the Copy Group Pairs List panel appears. In this panel, you can specify the order for displaying copy pairs. For details about the Sort the Copy Group Pairs List panel, see Sort the Copy Group Pairs List panel on page 1-95.

You can use the LOCATE and SORT commands in the Copy Group Pair Detail panel. For details about how to use each command, see Commands that can be used in the ISPF panels on page 1-4.

Note:

- Even if you dissolve all of the copy pairs in a copy group, the copy group itself is not deleted. To delete the copy group itself, the corresponding copy group ID must be deleted from the Copy Group Selection List panel. If there is a copy group with no copy pairs, the copy group operation results in an error.
- When you enter an action in the **AC** column, complete the action by pressing the **Enter** key, and then perform the next operation.
- When an EXCTG attribute is defined, if you edit the copy pair definition in this panel, the storage system information belonging to the copy group might change. Therefore, check the definition of the EXCTG attribute in the Copy Group Detail Definition panel.
- If the copy group is not a copy group container, selecting **Use Container** and pressing the **Enter** key returns the screen to the Copy Group Detail Definition panel. By doing this, you can change the definition of the copy group from not being a copy group container to being a copy group container.

Pair Selection List (Primary) panel

In the Pair Selection List (Primary) panel, you can specify the P-VOL of the copy pair.

If you select **Devn**, enter the range of device numbers, and then press the **Enter** key, s is displayed in **AC** of each volume that falls within the range from the starting device to the ending device. If you then press the **Enter** key with s displayed in **AC**, the volumes become selected. A similar operation occurs when you select **Volser** and specify the volumes by volume serial numbers.

If you press the **F4=Import** key, the Select Import Group panel appears. In this panel, you can import information about the volumes of SMS storage groups or of copy groups.

```
                    Pair Selection List (Primary)  Row 1 to 5 of 1,119
Command ===> ______________________________________ Scroll ===> PAGE

Select range by placing '/' in either Devn( ) or Volser( ):
Devn ( _ ) :  ____  ,  ____  Volser ( _ ) :  ______  , ______
Automatic Pairing ( _  )
-------------------------------------------------------------------
AC Prompts     Volser  Devn  SN     SSID  CU  CCA       Cyls
_                      7310  14002  2340  00  10      262668
s                      7311  14002  2340  00  11      262668
s                      7312  14002  2340  00  12      262668
_              QA7340  7313  14002  2340  00  13      262668
_                      7314  14002  2340  00  14      262668
 F1=Help       F4=Import     F5=Second     F7=Backward   F8=Forward
F12=Cancel
```

The following table lists and describes the items in the Pair Selection List (Primary) panel.

Item	Description
Devn#	If the P-VOLs are specified by device numbers, select this item by entering a forward slash (/), and then specify the device number range (as ascending hexadecimal numbers).
Volser#	If the P-VOLs are specified by volume serial numbers, select this item by entering a forward slash (/), and then specify the volume serial number range (in EBCDIC code order).
Automatic Pairing	To use the automatic pairing function to create a copy pair of the volumes with the same device number, add a check mark (/). When using the automatic pairing function, do not specify the S-VOL. Also, create in advance a disk configuration definition file for the S-VOL that has the same device number as the P-VOL.
AC	Specify s for volumes joined in copy pairs. Copy pairs are joined in ascending order of device number.
Prompts	• Displays *In Config once a copy pair is joined (once the paired device has been determined). • Displays *Imported if the device is imported from the SMS storage group.
Volser	Volume serial number
Devn	Device number The volumes whose subchannel set ID was specified as the primary subchannel set ID in the Add Copy Group panel are displayed.
SN	Storage system serial number
SSID	SSID
CU	Control unit number
CCA	The two leftmost digits indicate the command control address of the volume (in hexadecimal). The rightmost digit indicates whether the command control address is an external volume. • +: External volume • –: Not an external volume • Blank: The volume attribute is unknown.
Cyls	Volume capacity (the number of cylinders)

#: The procedure to specify the range is the same as for specifying the pattern parameter for the SELECT command. For details about how to specify the pattern parameter for the SELECT command, see Commands that can be used in the ISPF panels on page 1-4.

If you press the **F5=Second** key, the Pair Selection List (Secondary) panel appears. In this panel, you can specify an S-VOL for a copy pair. For details

about the Pair Selection List (Secondary) panel, see Pair Selection List (Secondary) panel on page 1-91.

If the number of P-VOLs selected does not match the number of S-VOLs, this panel remains ready to accept volumes selections until the number matches the number of S-VOL devices. Once the number of selected volumes matches the number of S-VOLs, display transits to the Copy Group Pair Detail panel.

You can use the `SELECT` command in the Pair Selection List panel. For details about how to use the `SELECT` command, see Commands that can be used in the ISPF panels on page 1-4.

You can specify the following fields for a condition of the `SELECT` command:

Name of field	Value in field	Type
`DEVN`	Device number	Hexadecimal
`VOLSER`	Volume serial number	Character string

If you omit the field name, `DEVN` will be set as a default value.

Select Import Group panel

In the Select Import Group panel, you can select whether to import information about the volumes of SMS storage groups or of copy groups.

```
                        Select Import Group
Command ===> ____________________________________________________

Which of the following items do you want to import:
_  1. SMS Storage Group
   2. Copy Group

 F1=Help     F12=Cancel
```

The following table lists and describes the items in the Select Import Group panel.

Item	Description
Which of the following items do you want to import:	Specify whether to import SMS storage groups or copy groups. • `1`: The Import SMS Storage Group panel for importing SMS storage groups appears. • `2`: The Import Copy Group panel for importing copy groups appears.

Import SMS Storage Group panel

In the Import SMS Storage Group panel, you can import SMS storage groups.

```
                        Import SMS Storage Group
Command ===> ____________________________________________________

Write the SMS Storage Group Name:
```

```
SMS Storage Group Name:  . . . . . . . ________
Complete SMS Storage Group Name: . . ________________________________

 F1=Help     F4=SMSlist F12=Cancel
```

The following table lists and describes the items in the Import SMS Storage Group panel.

Item	Description
SMS Storage Group Name	Specify the SMS storage group name (within 8 characters) used by Business Continuity Manager.
Complete SMS Storage Group Name	Specify the SMS storage group name to acquire data from DFSMS Access Method Service. If this is the same name as the one specified in the **SMS Storage Group Name** column, this is optional.

The SMS storage group is read when you press the **Enter** key after entering an SMS storage group name in the **SMS Storage Group Name** column.

If the SMS storage group name contains 9 or more characters, specify the SMS storage group name (within 8 characters) used by Business Continuity Manager in the **SMS Storage Group Name** column, and the SMS storage group name that is used for acquiring data from DFSMS Access Method Service in the **Complete SMS Storage Group Name** column.

Import SMS Storage Group Result panel

The Import SMS Storage Group Result panel displays the number of volumes that have been newly added to the SMS storage group.

```
   Import SMS Storage Group Result
Command ===> ________________________

New 5 Volume(s) found.

Enter key for Return.
```

If an additional volume is found and the Pair Selection List (Primary) panel is displayed for adding a copy pair, the volume serial number of the found volume is displayed as a P-VOL candidate.

Import Copy Group panel

In the Import Copy Group panel, you can import volume information of a copy group.

```
                   Import Copy Group
Command ===> ______________________________________________________

Select the Copy Group ID that you want to import.

Supported action: s(Select)
_  Copy Group ID  :
_  C/T ID(JNL ID) :
```

```
Select Volume(s) from:
_  1. primary volume.
   2. secondary volume.

 F1=Help     F12=Cancel
```

The following table lists and describes the items in the Import Copy Group panel.

Item	Description
Copy Group ID	Specify an action. • `s`: Displays the Select Copy Group ID panel used to display a list of copy group IDs.
C/T ID(JNL ID)	Specify an action. • `s`: Filters targets by consistency group ID. The Select C/T ID panel appears, displaying a list of the consistency group IDs in the copy group specified for **Copy Group ID**. If no copy group ID is specified for **Copy Group ID**, an error occurs.
Select Volume(s) from	Specify whether to import P-VOLs or S-VOLs in the copy group specified for **Copy Group ID**. • `1`: Imports P-VOLs. • `2`: Imports S-VOLs.

If you specify a copy group ID for **Copy Group ID**, enter a value for **Select Volume(s) from**, and then press the **Enter** key, the volumes in the copy group will be imported.

If you do not specify a value for **C/T ID(JNL ID)**, all volumes in the copy group will be imported.

If the device address domain ID and subchannel set ID are different between the import source and import destination, the import operation cannot be performed.

Select Copy Group ID panel

The Select Copy Group ID panel displays a list of copy group IDs.

This list displays only the copy group IDs whose prefix matches that of the configuration file entered in the Setting Information panel, whose device address domain ID matches the ID entered in the Add Copy Group panel, and whose subchannel set ID matches the ID entered in the Add Copy Group panel.

```
                        Select Copy Group ID          Row 1 to 1 of 1
Command ===> ________________________________________ Scroll ===> PAGE

Supported actions: s(Select), b(Browse)
AC Copy Group ID ------------------------
_  CG.SI
_  CG.TC
```

```
_  CG.UR

 F1=Help       F7=Backward   F8=Forward   F12=Cancel
```

The following table lists and describes the items in the Select Copy Group ID panel.

Item	Description
AC	Specify an action. • `s`: Specify this option if you want to select the copy group ID. If you specify `s` for multiple **AC** rows, the last row is selected. • `b`: Specify this option if you want to view information about copy pairs in the copy group. The Browse Copy Group Pair panel is displayed. If the copy group is a copy group container, the Browse Copy Group C/T ID panel is displayed.

Select Copy Group C/T ID panel

The Select Copy Group C/T ID panel displays a list of the consistency group IDs in the specified copy group (copy group container).

```
                      Select Copy Group C/T ID        Row 1 to 3 of 3
Command ===> ________________________________________ Scroll ===> PAGE

Copy Group ID . : CG.TC
Copy Group Type : TC
-------------------------------------------------------------------
Supported actions: s(Select), b(Browse)
     C/T  ID  Pair(s)  Primary  Secondary
AC      sub            S/N      S/N
_   0A             6  00001    00002
_   10             6  00002    00004
_   11             2  00003    00001

 F1=Help       F7=Backward   F8=Forward   F12=Cancel
```

The following table lists and describes the items in the Select Copy Group C/T ID panel.

Item	Description
AC	Specify an action. • `s`: Specify this option if you want to select the consistency group ID. If you specify `s` for multiple **AC** rows, the last row is selected. • `b`: Specify this option if you want to view information about copy pairs in the consistency group. The Browse Copy Group Pair panel is displayed.

Browse Copy Group C/T ID panel

The Browse Copy Group C/T ID panel displays a list of the consistency groups in the specified copy group (copy group container).

```
                        Browse Copy Group C/T ID        Row 1 to 3 of 3
Command ===> ________________________________________ Scroll ===> PAGE

Copy Group ID . : CG.TC
Copy Group Type : TC
-------------------------------------------------------------------
Supported action: b(Browse)
    C/T  ID  Pair(s)  Primary  Secondary
AC      sub           S/N      S/N
_   0A             6  00001    00002
_   10             6  00002    00004
_   11             2  00003    00001

 F1=Help       F7=Backward   F8=Forward   F12=Cancel
```

The following table lists and describes the items in the Browse Copy Group C/T ID panel.

Item	Description
AC	Specify an action. • `b`: Specify this option if you want to view information about copy pairs in the consistency group. The Browse Copy Group Pair panel is displayed.

Browse Copy Group Pair panel

The Browse Copy Group Pair panel displays a list of the copy pairs in the specified copy group.

```
                        Browse Copy Group Pair         Row 1 to 2 of 2
Command ===> ________________________________________ Scroll ===> PAGE

Copy Group ID . : CG.TC
C/T ID  . . . . : 11  Sub C/T ID . . :
Copy Group Type : TC  Primary SCHSET : 0  Secondary SCHSET : 1
-------------------------------------------------------------------
VOLSER  Pri: LOCAL--------       Sec: REMOTE-------
        Devn SN -  SSID CU CCA   Devn SN -  SSID CU CCA
        1610 10051 5120 20 10    1610 10057 5720 20 10
        1611 10051 5120 20 10    1611 10057 5720 20 10

 F1=Help       F7=Backward   F8=Forward   F12=Cancel
```

Pair Selection List (Secondary) panel

In the Pair Selection List (Secondary) panel, you can specify the S-VOL of the copy pair.

If you select **Devn**, enter the range of the device numbers, and then press the **Enter** key, `s` is displayed in **AC** of each volume that falls within the range from the starting device and ending device. If you then press the **Enter** key with `s` displayed in **AC**, the volumes become selected. A similar operation

occurs when you select **Volser** and specify the volumes by volume serial numbers or when you select **Device Address** and specify the volumes by device addresses.

```
                  Pair Selection List (Secondary) Row 1 to 5 of 1,026
Command ===> ________________________________________ Scroll ===> PAGE

Select one of the following ranges by entering '/':
Devn ( / ) :  2A01  ,  2A02  Volser ( _ ) :  ______  , ______
Device Address ( _ ) :  SN _____  CUCCA ____  , ____
-----------------------------------------------------------------
AC Prompts     Volser  Devn  SN     SSID  CU  CCA       Cyls
_                      2A00  14001  2350  00  00      262668
_                      2A01  14001  2350  00  01      262668
_                      2A02  14001  2350  00  02      262668
_                      2A03  14001  2350  00  03      262668
_                      2A04  14001  2350  00  04      262668
 F1=Help    F4=Import   F5=Prim     F6=Sort    F7=Backward   F8=Forward
F12=Cancel
```

The following table lists and describes the items in the Pair Selection List (Secondary) panel.

Item	Description
Devn#	If the S-VOLs are specified by device numbers, select this item by entering a forward slash (/), and then specify the range of device numbers (as ascending hexadecimal numbers).
Volser#	If the S-VOLs are specified by volume serial numbers, select this item by entering a forward slash (/), and then specify the range of volume serial numbers (in EBCDIC code order).
Device Address#	If the S-VOLs are specified by device addresses, select this item by entering a forward slash (/), and then specify the range of device addresses (as ascending hexadecimal numbers).
AC	Specify s for volumes joined in copy pairs. The copy pairs are joined in order from the top of the displayed list.
Prompts	Displays *In Config once a copy pair is joined (once the paired device has been determined).
Volser	Volume serial number
Devn	Device number The volumes whose subchannel set ID was specified as the secondary subchannel set ID in the Add Copy Group panel are displayed. If no dummy device number is assigned, **** is displayed. If you select a volume of ****, the same device number as that of the P-VOL is assigned as the dummy device number.
SN	Storage system serial number
SSID	SSID
CU	Control unit number
CCA	The two leftmost digits indicate the command control address of the volume (in hexadecimal).

Item	Description
	The rightmost digit indicates whether the command control address is an external volume. • +: External volume • –: Not an external volume • Blank: The volume attribute is unknown.
Cyls	Volume capacity (the number of cylinders)

#: The procedure to specify the range is the same as specifying the pattern parameter for the SELECT command. For details about how to specify the pattern parameter for the SELECT command, see Commands that can be used in the ISPF panels on page 1-4.

If the number of S-VOLs selected does not match the number of P-VOLs, this panel remains ready to accept volume selections until the number matches the number of P-VOLs. Once the number of selected volumes matches the number of P-VOLs, display transits to the Copy Group Pair Detail panel.

If you press the **F6=Sort** key, the Sort Pairs Selection List panel appears. In this panel, you can specify a sort key. For details about the Sort Pairs Selection List panel, see Sort Pairs Selection List panel on page 1-93.

You can use the SELECT command and the SORT command in the Pair Selection List (Secondary) panel. For details about how to use the SELECT command and the SORT command, see Commands that can be used in the ISPF panels on page 1-4.

You can specify the following fields for the sort key of the SORT command:

Name of field	Sorted by	Direction
DEVN	Device number	Ascending
DEVICE	Device address	Ascending

You can specify the following fields for a condition of the SELECT command:

Name of field	Value in field	Type
DEVN	Device number	Hexadecimal
VOLSER	Volume serial number	Character string
DEVICE	Device address	Hexadecimal

If you omit the field name, DEVN will be set as a default value.

Sort Pairs Selection List panel

In the Sort Pairs Selection List panel, you can specify a sort key.

```
                Sort Pairs Selection List
Command ===> ____________________________________
```

```
Select the desired sort sequence:
Choose one
_  1. Device Number
   2. Device Address Number

 F1=Help   F12=Cancel
```

In the Sort Pairs Selection List panel, you can select one of the following sort orders:

Item	Description
1. Device Number	In order by device number
2. Device Address Number	In order by device address number

Sort Copy Group Container panel

In the Sort Copy Group Container panel, you can specify a sort key for displaying copy group containers.

```
             Sort Copy Group Container
Command ===> ____________________________________

Select the desired sort sequence:
Choose one
_  1. C/T Group ID
   2. sub C/T Group ID
   3. Primary Storage System Serial Number
   4. Secondary Storage System Serial Number
   5. Primary Command Device for Arbitration
   6. Secondary Command Device for Arbitration
   7. Path Group ID

 F1=Help     F12=Cancel
```

In the Sort Copy Group Container panel, you can select the sorting order from the following items.

Item	Sort order
1. C/T Group ID	consistency group ID order
2. sub C/T Group ID	Sub consistency group ID order
3. Primary Storage System Serial Number	Order of the serial number of the primary storage system
4. Secondary Storage System Serial Number	Order of the serial number of the secondary storage system
5. Primary Command Device for Arbitration	Order of the arbitration command device number (primary storage system)
6. Secondary Command Device for Arbitration	Order of the arbitration command device number (secondary storage system)
7. Path Group ID	Path group ID order

Sort the Copy Group Pairs List panel

In the Sort the Copy Group Pairs List panel, you can specify a sort key for displaying copy pairs.

```
      Sort the Copy Group Pairs List
Command ===> ____________________________

Select the desired sort sequence:
Choose one
_  1. Primary Device Number
   2. Primary Volume Serial Number
   3. Secondary Device Number
   4. Cylinder

F12=Cancel
```

In the Sort the Copy Group Pairs List panel, you can select the sorting order from the following items.

Item	Description
1. Primary Device Number	The order of P-VOL device numbers.
2. Primary Volume Serial Number	The order of P-VOL serial numbers.
3. Secondary Device Number	The order of S-VOL device numbers.
4. Cylinder	The order of the comparison results of the P-VOL and S-VOL capacities. (The **CYL** value is in the following order: `P`, `S`, `N/A`, and an empty string.) For details about **CYL**, see Copy Group Pair Detail panel on page 1-82.

Scan Copy Pair Inside Storage System panel

In the Scan Copy Pair Inside Storage System panel, you can create a copy group definition file by scanning the P-VOL of a PPRC copy pair.

Execute the `YKH2B` command to create a copy group definition file for a TrueCopy copy group with the HyperSwap attribute from a PPRC copy pair or a PPRC copy pair in a 3DC Multi-Target (TCxTC) configuration for which HyperSwap is enabled. For details about the `YKH2B` command, see YKH2B command on page 2-86.

```
              Scan Copy Pair Inside Storage System
Command ===> ______________________________________________

Enter Configuration Definition Name
  Device Address Domain,
    Primary                    ______________________________
    Secondary                  ______________________________
    SI Pair (S-VOL) Non Gen'ed ______________________________
  TC Copy Group ID             MYTCS
  SI Copy Group ID             _______
  Device Num            Start: ____      End: ____
  HS                           NOCHECK  (CHECK or NOCHECK)
```

```
F1=Help    F12=Cancel
```

The following table lists and describes the items in the Scan Copy Pair Inside Storage System panel.

Item		Description
Device Address Domain,	**Primary**	Specify the device address domain ID of the P-VOL for the PPRC copy pairs to be scanned (required).#1
	Secondary	Specify the device address domain ID of the S-VOL for the PPRC copy pairs to be scanned (required for TrueCopy).#1
	SI Pair (S-VOL) Non Gen'ed	Specify the Non Gen'ed device address domain ID of the S-VOL for the PPRC ShadowImage copy pairs to be scanned (required when the S-VOL of the ShadowImage copy pair is a Non Gen'ed volume).#1
TC Copy Group ID		Specify a TrueCopy copy group name (required only when a device address domain ID is specified for **Secondary**).#2 Two-digit serial numbers beginning with `00` are assigned in ascending order to the copy group names specified by this parameter (for example, `00`, `01`, `02`...). The initial display is `MYTCS`.
SI Copy Group ID		Specify a ShadowImage copy group name.#2 Two-digit serial numbers in ascending order beginning with `00` are assigned to the copy group names specified by this parameter (example: `00`, `01`, `02` ...). No initial value is displayed.
Device Num		Specify the **Start** and **End** of the device number range for scanning the P-VOL of the PPRC copy pair, using hexadecimal numbers in ascending order (required). Note: The device number range cannot be omitted. To scan only a single volume, specify the same volume for **Start** and **End**.
HS		When creating a TrueCopy copy group definition file, you can indicate whether or not HyperSwap is enabled for the detected PPRC copy pair. If the search range contains both volumes for which HyperSwap is enabled and volumes for which HyperSwap is not enabled, by specifying `CHECK`, you can prevent PPRC copy pairs for which HyperSwap is enabled from being defined in the TrueCopy copy group definition file. If the search range does not contain volumes for which HyperSwap is enabled, specify `NOCHECK`. • `CHECK`: Acquires the UCB information (`UCBHSWAP`) of the P-VOLs of the detected PPRC copy pairs, and checks whether HyperSwap is enabled. PPRC copy pairs for which `UCBHSWAP` is set to `ON` are not defined in the TrueCopy copy group definition file. • `NOCHECK`: Does not check whether HyperSwap is enabled for the detected PPRC copy pairs. All detected copy pairs, even if HyperSwap is enabled for them, are

Item	Description
	defined as TrueCopy copy groups without the HyperSwap attribute. The initial display is `NOCHECK`.

#1: For details about the characters and maximum length that can be specified, see Names of configuration files on page 3-2.

#2: You can specify up to six characters. Hyphens cannot be specified.

Pressing the **Enter** key starts the background job for scanning the P-VOL.

The volumes within the range specified in **Device Num** are scanned. If an invalid character is specified, or if the value specified for **Start** is greater than the value specified for **End**, an error message prompts you to re-enter the values.

The values specified here are used during the execution of the background job. JCL uses a value indicated in the Set Defaults panel (default settings for the site) on page 1-22.

Before executing a scan, create a disk configuration definition file for the search-target storage system in the Discover Hitachi Storage System panel.

When the background scanning job is completed, scan results are output to a job log. For details about examples of scan results, see Example of the scan results of PPRC copy pairs on page C-2.

The configuration information of the scanned PPRC copy pair is stored in the copy group definition file. A name that conforms to the prefix value specified in **Configuration File Prefix** on the Set Defaults panel, and the copy group name specified for **TC Copy Group ID**, or **SI Copy Group ID** on this panel is assigned to the copy group definition file using the following format:

prefix.GRP.*ggggggnn*

Legend:

gggggg: Copy group name

nn: 2-digit serial number beginning with `00`

A copy group definition file is created as follows.

- ShadowImage (with no consistency group ID specified) and TrueCopy
  A copy group definition file is created for each subchannel set ID of the S-VOLs of the searched copy pairs.
- ShadowImage (with a consistency group ID specified)
  A copy group definition file is created for each consistency group.
  When multiple subchannel sets are used, a copy group definition file is created for each subchannel set ID of the S-VOLs in the consistency group.

To check the created copy group definition file, press the **F4=Refresh** key in the Copy Group Selection List panel.

Note:

- If a copy group definition file having the same name already exists, it is overwritten. When executing scan operations repeatedly, we recommend that you change the value specified for **TC Copy Group ID**, or **SI Copy Group ID** before each execution.

  If you specify `NOCHECK` for **HS**, the search range must not include a TrueCopy pair volume of PPRC for which HyperSwap is enabled, or the pair will be defined as part of a TrueCopy copy group without the HyperSwap attribute.
- Copy group definition files for copy types that the user does not have access permission are not created.
- If multiple subchannel sets are used, the active subchannel set ID of the volumes with the device number to be specified must be 0. If the ID is not 0, this function terminates abnormally with the return code 8.

Browse Copy Group Detail Definition panel

The Browse Copy Group Detail Definition panel displays copy groups by the consistency groups included in a copy group container.

```
                     Browse Copy Group Detail Definition       Row 1 to 2 of 2
Command ===> ________________________________________________ Scroll ===> PAGE

                                                          2008/03/11 18:43:30

Copy Group Type : UR   Copy Group ID : UR
Description  . . . . . . . . . . . . : UR COPY GROUP
Primary Device Address Domain  . . . : DADP
Secondary Device Address Domain  . . : DADR
     Enable EXCTG Attributes      EXCTG ID(Forward)       EXCTG ID(Reverse)
-------------------------------------------------------------------------------
Supported actions: s(Select)
      Grp  C/T ID           Primary -----------  Secondary ---------  Path ID
AC    Num     sub  Pair(s)  S  S/N      ArbCdev  S  S/N      ArbCdev
_       1  01 01         1     14002                64050                  00
_       2  02 02         1     14002                64050                  01
****************************** Bottom of data ********************************



 F1=Help      F3=Exit      F4=Attr      F7=Backward  F8=Forward  F12=Cancel
```

For details about the items displayed in the Browse Copy Group Detail Definition panel, see Copy Group Detail Definition panel on page 1-71.

If you press the **F4=Attr** key, the Copy Group Attributes For Container panel appears. For details about the Copy Group Attributes For Container panel, see Copy Group Attributes panel and Copy Group Attributes For Container panel on page 1-74.

You can view the copy group attributes in the Browse Copy Group Detail Definition panel, but you cannot edit them.

Browse Copy Group Pair Detail panel

The Browse Copy Group Pair Detail panel displays the details of the copy pairs in the copy group.

```
                         Browse Copy Group Pair Detail          Row 1 to 1 of 1
Command ===> ____________________________________________________ Scroll ===> PAGE

                                                          2017/11/20 18:44:55
Copy Group ID : CG.UR
Description : UR COPY GROUP
Copy Group Type : UR   Primary SCHSET : 0  Secondary SCHSET : 0
--------------------------------------------------------------------------------
  Grp  VOLSER  Pri: DADP--------------     Sec: DADR--------------      CYL
  Num          Devn  SN --  SSID  CU CCA   Devn  SN --  SSID  CU  CCA
    1  BCM001  7300  14002  2340  00 00-   6000  64050  6000  00  00-
    1  BCM002  7301  14002  2340  00 01-   6001  64050  6000  00  01-
    1  BCM003  7302  14002  2340  00 02-   6002  64050  6000  00  02-
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F4=Attr      F6=Sort      F7=Backward  F8=Forward
F12=Cancel
```

For details about the Browse Copy Group Pair Detail panel, see Copy Group Pair Detail panel on page 1-82.

If you press the **F4=Attr** key, the Copy Group Attributes panel appears. For details about the Copy Group Attributes panel, see Copy Group Attributes panel and Copy Group Attributes For Container panel on page 1-74.

In the Browse Copy Group Pair Detail panel, you can browse the details of copy groups, but you cannot edit copy groups.

If you press the **F6=Sort** key, the Sort the Copy Group Pairs List panel appears. In this panel, you can specify the order for displaying copy pairs. For details about the Sort the Copy Group Pairs List panel, see Sort the Copy Group Pairs List panel on page 1-95.

You can use the `LOCATE` and `SORT` commands in the Browse Copy Group Pair Detail panel. For details about how to use each command, see Commands that can be used in the ISPF panels on page 1-4.

Manage Route panel (route management)

You can perform operations on routes from the Manage Route panel.

Panel transitions from the Manage Route panel

The following figure shows the panel transitions from the Manage Route panel.

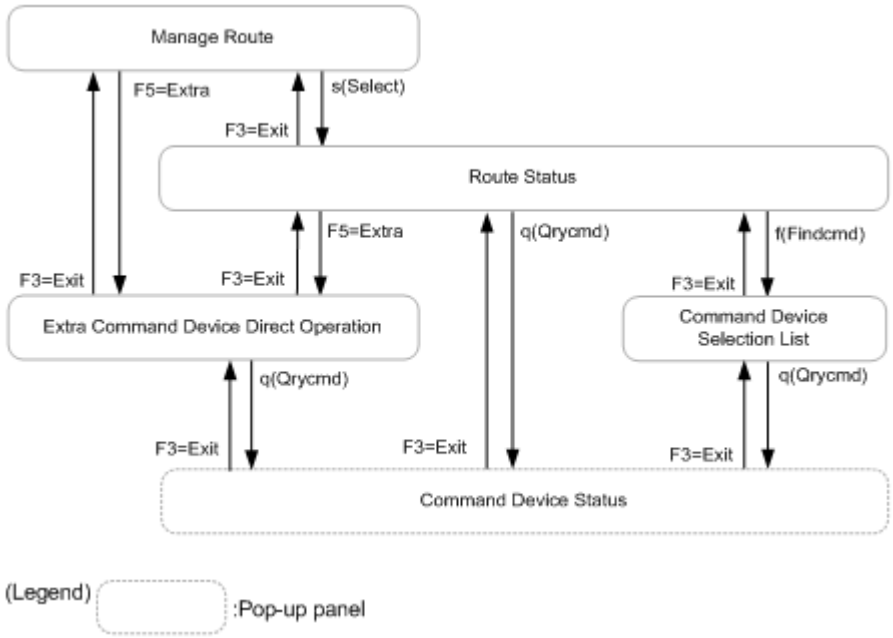


Figure 1-10 Panel transitions from the Manage Route panel

Manage Route panel

The Manage Route panel displays the defined route list.

```
                                Manage Route                  Row 1 to 3 of 3
Command ===> ___________________________________________ Scroll ===> PAGE

                                                        2008/02/29 10:10:08
Supported actions: s(Select)

AC Route List ID -----------
_  TC1
_  UR2DC
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F5=Extra     F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Manage Route panel.

Item	Description
AC	Specify an action. • `s`: Displays the Route Status panel used to display the information on the route list ID.
Route List ID	Route list ID

Extra Command Device Direct Operation panel

In the Extra Command Device Direct Operation panel, you can perform operations for command devices not defined in the route list. Note that you cannot register command devices.

```
                    Extra Command Device Direct Operation
Command ===> ____________________________________________________________________

                                                          2008/03/11 19:49:51

Supported actions: q(Qrycmd), d(Delcmd)

Specify the following values to query/delete a command device
that is not defined in the route list:

Route List ID  . . . : R129

                                            Serial
AC  Status   Device Address Domain ID       Number   Devn
_            ______________________________  ______   ______

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Extra Command Device Direct Operation panel.

Item	Description
Route List ID	Route list ID selected in the Manage Route panel. You can operate command devices on a device address domain that includes command devices defined in the displayed route list ID. If you press the **F5=Extra** key without specifying a route list ID in the Manage Route panel, the message `*** Route List is not selected ***` is displayed.
AC	Specify an action. • `q`: Displays command device information. The Command Device Status panel is displayed. • `d`: Deletes command device that is registered in the storage system. You need to specify all input columns to execute an action.
Status	Execution result of the action specified for **AC**# • `Qry`,*nnn*: displays the results (return code) of display processing for the command device information, in *nnn*. • `Del`,*nn*: displays the results (return code) of deletion processing for the command device, in *nn*.
Device Address Domain ID	Specify the device address domain ID, using alphanumeric characters (required). Hyphens cannot be specified. If no route list ID is specified (that is, when this panel is displayed from the Manage Route panel), operations can only be performed for local command devices. In this case, you cannot overwrite device address domain IDs that are already displayed.
Serial Number	Specify the storage system serial number, using 5 digits of alphanumeric characters (required).

Item	Description
Devn	Specify a 5-digit hexadecimal number that consists of a 1-digit subchannel set ID and the 4-digit device number of the command device. (The device number is required.)

#: If the specified action has been aborted, the execution result (RC) is not displayed correctly.

When you change or delete the route list, command devices defined in the list can remain registered in the storage system. You can use this panel to directly operate such devices by entering the appropriate device address domain ID and storage system serial number to specify the storage system, as well as the device number of the command device. The command devices you can operate here are those for which a device number (Devn) is defined in the disk configuration definition file.

Note: Take care not to delete command devices defined in the route list.

Route Status panel

The Route Status panel displays a route that indicates the status of the path connection device address domain from top to bottom.

When registering a command device, perform the settings in order, starting from the primary site and progressing towards the more distant site (in the order in which they are defined in the route list).

To delete a command device, perform deletion in the reverse order of the route list definition, starting from the most distant site where a command device has been already registered, progressing towards the Primary site. For details about how to delete a command device, see the *Hitachi Business Continuity Manager User Guide*.

Route Status panel (when the F10=DADInfo key is pressed)

```
                                  Route Status                   Row 1 to 6 of 6
 Command ===> ___________________________________________________ Scroll ===> PAGE

                                                            2011/07/08 13:04:48
 Supported actions: q(Qrycmd), b(Bldcmd), d(Delcmd), f(Findcmd)

 Route List ID  . . . . . : LOS.NY.T
 HOST ID . . : 00
 ------------------------------------------------------------------------------
              Route                                          Serial
 AC  Status   Num   Lst  Device Address Domain ID      APID  Number  Devn
 _            1     1    LOS                           0001  10037   00C81
 _            1     1    LOS                           0002  10037   00C82
 _            1     1    LOS                           0003  10037   00C83
 _            1     2    NY                            0001  53039   01181
 _            1     2    NY                            0002  53039   01182
 _            1     2    NY                            0003  53039   01183
******************************** Bottom of data ********************************
```

```
 F1=Help      F3=Exit      F5=Extra     F7=Backward  F8=Forward  F10=DADInfo
F11=CCAInfo  F12=Cancel
```

Route Status panel (when the F11=CCAInfo key is pressed)

```
                                Route Status                  Row 1 to 6 of 6
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                        2011/07/08 13:05:26
Supported actions: q(Qrycmd), b(Bldcmd), d(Delcmd), f(Findcmd)

Route List ID  . . . . . : LOS.NY.T
HOST ID . . : 00
--------------------------------------------------------------------------------
             Route                        Serial
AC  Status   Num   Lst  Label     APID  Number  SSID  CU   CCA  Devn   Volser
_            1     1              0001  10037   000A  06   81   00C81  SO0C81
_            1     1              0002  10037   000A  06   82   00C82  SO0C82
_            1     1    LABEL1    0003  10037   000A  06   83   00C83  SO0C83
_            1     2              0001  53039   000E  08   81   01181
_            1     2              0002  53039   000E  08   82   01182
_            1     2    LABEL1    0003  53039   000E  08   83   01183
****************************** Bottom of data ******************************

 F1=Help      F3=Exit      F5=Extra     F7=Backward  F8=Forward  F10=DADInfo
F11=CCAInfo  F12=Cancel
```

The following table lists and describes the items in the Route Status panel.

Item	Description
Route List ID	Route list ID selected in the Command Device Status panel.
HOST ID	Host ID assigned to the local host#1
AC	Specify an action. • `q`: Executes the `YKQRYDEV` command to display the command device information. The Command Device Status panel is displayed. • `b`: Executes the `YKBLDCMD` command to register a command device in a storage system. • `d`: Executes the `YKDELCMD` command to delete the command device that is registered in a storage system. • `f`: Detects all command devices registered with the storage system from the list of devices registered in the disk configuration definition file. The Command Device Status panel is displayed.#4 When multiple actions have been specified in multiple **AC** columns, they are carried out in the order `b`, `d`, `q`, and `f`. When `d` is selected in multiple **AC** columns, the operation proceeds in order from bottom to top. All actions other than `d` proceed in order from top to bottom.
Status	Execution result of the action specified for **AC**#2 • `Qry`,*nnn*: Displays the result (RC) of display processing for the command device information, in *nnn* format.

Item	Description
	• `Bld`,*nn*: Displays the result (RC) of registration processing for the command device, in *nn* format. • `Del`,*nn*: Displays the result (RC) of deletion processing for the command device, in *nn* format. • `Fnd`,*nn*: Displays the result (RC) of a command device query, in *nn* format.
Route Num	Route number
Lst	Placement (list number) of the storage system within the same route number
Device Address Domain ID	Device address domain ID
Label	Route label
APID	APID#1
Serial Number	Storage system serial number
Devn	Subchannel set ID and device number of the command device#3
SSID	SSID of the control unit to which the command device within the storage system belongs
CU	The number of the control unit to which the command device within the storage system belongs
CCA	Command control address of the command device within the storage system
Volser	Volume serial number for the command device

#1: If the information cannot be obtained, `N/A` is displayed.

#2: If the specified action has been aborted, the execution result (RC) is not displayed correctly.

#3: If a device number has not been assigned, `*****` is displayed.

#4: If you press the **F3=Exit** key to exit the Command Device Selection List panel, **Status** displays the processing result of a command device query (`Fnd`,*nn*).

Note: Note the following when registering command devices:

- After turning power on for the storage system, register a command device only once. If you register a command device more than once, when the command device has already been registered in the storage system, the command device will not be registered. Before registering a command device, make sure that the target command device does not control the storage system.
- If a command device is registered, do not delete the path to the storage system (inter-control unit logical path or inter-disk controller logical path).

- Take the target command device offline before registering the command device.

Note: Note the following when deleting command devices:

- When a command device is deleted, the copy pair created in the storage system to which the target command device belongs will become inoperable. Dissolve the copy pair before deleting a command device.
- When the command device on the Primary site is shared between the route of Primary to Local and the route of Primary to Remote in the 3DC Multi-Target configuration route list, the command device on the Primary site must be deleted at the end.

You can use the `SELECT` command in the Route Status panel. For details about how to use the `SELECT` command, see Commands that can be used in the ISPF panels on page 1-4.

You can specify the following fields as a condition of the `SELECT` command.

Name of field	Value in field	Type
DADID	Device address domain ID	Character string
LABEL	Route label	Character string
APID	APID	Hexadecimal number
SN	Storage system serial number	Character string
CU	Number of the control unit to which the command device belongs	Hexadecimal number
CCA	Command control address of the command device	Hexadecimal number
DEVN	Subchannel set ID and device number	Hexadecimal number
VOLSER	Volume serial number	Character string

If the field name is omitted, either of the following fields is set as the default:

- In the Route Status panel displayed when the **F10=DADInfo** key is pressed: **DADID**
- In the Route Status panel displayed when the **F11=CCAInfo** key is pressed: **LABEL**

Command Device Status panel

The Command Device Status panel displays the status of command devices.

Command Device Status panel (when a volume is registered as a command device)

```
                          Command Device Status
Command ===> ____________________________________________________________

                                                        2008/03/11 19:00:13

Storage System/Device Information
  Model  . . : VSPG1000      uCODE : 600243FF  IFType : 4040
  S/N  . . . : 64051         SSID  : 6800      CU . . : 00     CCA : 00
  HostStatus : OFFLINE

Command Device Information
  APID . . . : 7775

Copy Pair Information(s)
  SIMPLEX

 F1=Help    F12=Cancel
```

Command Device Status panel (when a volume is not registered as a command device, but defined as a copy pair)

```
                          Command Device Status            Row 1 to 1 of 1
Command ===> ______________________________________________ Scroll ===> PAGE

                                                        2008/03/19 19:23:04

Storage System/Device Information
  Model  . . : VSPG1000      uCODE : 80050002  IFType : 4040
  S/N  . . . : 64051         SSID  : 6800      CU . . : 00     CCA : 24
  HostStatus : OFFLINE

Command Device Information
  APID . . . : Notset

Copy Pair Information(s)
     ------- P-VOL -------        ------- S-VOL -------
Type SN     SSID  CU   CCA  Dir  SN     SSID  CU   CCA  Status
SI   64051  6800  00   24   >    64051  6800  00   25   DUPLEX (02)
***************************** Bottom of data ******************************

 F1=Help        F7=Backward    F8=Forward    F12=Cancel
```

Command Device Status panel (when a volume is not registered as a command device, nor defined as a copy pair)

```
                          Command Device Status
Command ===> ____________________________________________________________

                                                        2008/03/11 19:00:13

Storage System/Device Information
  Model  . . : VSPG1000      uCODE : 80050002  IFType : 4040
  S/N  . . . : 64051         SSID  : 6800      CU . . : 00     CCA : 00
  HostStatus : OFFLINE

Command Device Information
  APID . . . : Notset
```

```
Copy Pair Information(s)
  SIMPLEX

 F1=Help    F12=Cancel
```

The following table lists and describes the items in the Command Device Status panel.

Item		Description
Model		Model of the storage system to which the specified volume belongs#1
uCODE		Microcode information of the storage system to which the specified volume belongs#1
IFType		Interface version of the storage system to which the specified volume belongs#1
S/N		Serial number of the storage system to which the specified volume belongs#1
SSID		SSID to which the specified volume belongs#1
CU		Number of the control unit to which the specified volume belongs#1
CCA		Command control address to which the specified volume belongs#1
APID		APID#1 Displays `Notset` if it is not registered as a command device to the storage system.
HostStatus		Host connection status (online or offline) of the specified volume#1
Copy Pair Information(s)		Copy pair information#1, #2, #3 Displays `SIMPLEX` when not defined as a copy pair. Displays `JOURNAL` for the journal volume. Displays `Unauthorized` when no copy pair information can be obtained because the user does not have permission to access the copy type.
Type		Copy type (either `SI`, `TC`, or `UR`)
P-VOL	**SN**	Serial number of the storage system to which the P-VOL belongs
	SSID	SSID to which the P-VOL belongs
	CU	The number of the control unit to which the P-VOL belongs
	CCA	Command control address to which the P-VOL belongs
Dir		Copy direction
S-VOL	**SN**	Serial number of the storage system to which the S-VOL belongs
	SSID	SSID to which the S-VOL belongs

Item		Description
	CU	Number of the control unit to which the S-VOL belongs
	CCA	Command control address to which the S-VOL belongs
Status		Copy pair status See the table about the P-VOL/S-VOL status and copy pair status in the *Hitachi Business Continuity Manager User Guide*.

#1: If the information cannot be obtained, `N/A` is displayed.

#2: If the target volume is related to another volume as a copy pair, and not as a command device, the pair relationship is displayed.

#3: Even if a copy pair has been created, copy pair information for copy types that the user does not have access permission is not displayed.

Note: Volume information cannot be obtained when the command device on the remote site has not been registered (when the `YKBLDCMD` command has not been executed). In this case, if you execute the `YKQRYDEV` command, an I/O error occurs, and `N/A` is displayed for all items in the Command Device Status panel.

Command Device Selection List panel

The Command Device Selection List panel displays the command devices that are registered in storage systems.

When the route list definition has been modified or deleted, it sometimes happens that command devices defined in the old route list remain registered in the storage system. Such command devices can be accessed directly through this panel.

```
                         Command Device Selection List          Row 1 to 3 of 3
Command ===> ____________________________________________________ Scroll ===> PAGE

                                                          2008/03/11 18:59:32
Supported actions: q(Qrycmd), d(Delcmd)

Device Address Domain ID . : DADP
Description  . . . . . . . :
Model . : VSPG1000      uCode : 80050002  IFType : 4040
S/N . . : 64051
-------------------------------------------------------------------------------
AC Status   SSID  CU   CCA  Devn
_           6800  00   00   07340
_           6800  00   1F   0735F
_           6800  00   20   073D0
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Command Device Selection List panel.

Item	Description
Device Address Domain ID	Device address domain ID
Description	Description of the storage system specified in the Host-Discovered Array structure
Model	Storage system model • `VSPG1000`: VSP G1000 • `VSPG1500`: VSP G1500 • `VSPF1500`: VSP F1500 • `VSP5100` : VSP 5100 • `VSP5200` : VSP 5200 • `VSP5500` : VSP 5500 • `VSP5600` : VSP 5600 • `VSP5100H` : VSP 5100H • `VSP5200H` : VSP 5200H • `VSP5500H` : VSP 5500H • `VSP5600H` : VSP 5600H
uCode	Microcode information
IFType	Interface version
S/N	Storage system serial number
AC	Specify an action. • `q`: Displays the Command Device Status panel used to display the command device information, which is registered in the storage system. • `d`: Deletes the command device, which is registered in the storage system. When multiple actions are specified in multiple **AC** columns, the actions are executed in order from top to bottom.
Status	Execution result of the action specified for **AC**# • `Qry`,*nnn*: Displays the result (RC) of display processing for the command device information, in *nnn* format. • `Del`,*nn*: Displays the result (RC) of deletion processing for the command device, in *nn* format.
SSID	SSID of the control unit to which the detected command device belongs (4-digit hexadecimal number)
CU	Number of the control unit to which the detected command device belongs (2-digit hexadecimal number)
CCA	Command control address of the detected command device (2-digit hexadecimal number)
Devn	Subchannel set ID and device number of the detected command device (5-digit hexadecimal number)

#: If the specified action has been aborted, the execution result (RC) is not displayed correctly.

Note: Only devices registered in the disk configuration definition file are displayed. Scan the target storage system to detect command devices and register them in the disk configuration definition file in advance.

Manage Path Set panel (logical path management)

In the Manage Path Set panel, you can perform operations on path sets.

```
                                Manage Path Set                 Row 1 to 2 of 2
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                              2008/02/28 16:51:40
Supported actions: l(Load), b(Build), d(Delete), q(Query), c(Correct mismatch)

AC Path Set ID ------------------------  Status ------------------------------
_  TC6060                                NOT LOADED
_  TESTPATH                              NOT LOADED
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F10=PrevInfo F11=NextInfo
 F12=Cancel
```

Pressing the **F11=NextInfo** key displays **Description**. Pressing the **F10=PrevInfo** key returns to the previous display.

The following figure shows the Manage Path Set panel displayed when the **F11=NextInfo** key is pressed.

```
                                Manage Path Set                 Row 1 to 2 of 2
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                              2008/02/28 16:51:40
Supported actions: l(Load), b(Build), d(Delete), q(Query), c(Correct mismatch)

AC Path Set ID ------------------------  Description --------------------
_  TC6060                                PATH SET 1
_  TESTPATH                              PATH SET 2
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F10=PrevInfo F11=NextInfo
 F12=Cancel
```

The following table lists and describes the items in the Manage Path Set panel.

Item	Description
AC	Specify an action. • `l`: Executes the `YKLOAD` command to load a path set. • `b`: Executes the `YKBLDPTH` command to establish all logical paths in the selected path set. • `d`: Executes the `YKBLDPTH` command to delete all logical paths in the selected path set.

Item	Description
	• `q`: Executes the `YKQRYPTH` command to display the status of all logical paths in the selected path set. The Path Set Status panel is displayed.#1 • `c`: Executes the `YKQRYPTH` command with the `RESTRUCT` parameter specified to obtain port information of a storage system. To use this functionality, see the description in the *Hitachi Business Continuity Manager User Guide* that explains how to acquire path information from a storage system. When actions are entered in multiple **AC** columns, the actions are carried out in the order displayed.
Path Set ID	Path set ID
Status	Execution result of the action specified for **AC** • `NOT LOADED`: the path set has not been loaded. • `LOAD ERROR RC=`*xx*#2: An error occurred during loading the path set. • `LOADED WITH WARNINGS RC=`*xx*: The path set has not been loaded, but with warnings. • `LOADED`: Loading the path set was successful. • *action-name* `SUCCESSFULLY`: The action (*action-name*) was successful. • *action-name* `WARNINGS` *command-name* `RC=`*xx*: A warning occurred with the command (*command-name*), in the action (*action-name*). • *action-name* `WITH WARNINGS` *command-name* `RC=`*xx*: The command (*command-name*) within the action (*action-name*) generated an error message. • *action-name* `ERRORS` *command-name* `RC=`*xx*: The command (*command-name*) within the action (*action-name*) terminated with an error.
Description	A description of the path set

#1: If you press the **F3=Exit** key to exit the Path Set Status panel, **Status** in the Manage Path Set panel displays the execution result of the `YKQRYPTH` command that was executed to display the Path Set Status panel.

#2: *xx* is a return code from each command. If the return code is more than `8` and less than `32`, the path set definition file is updated.

Note: When you update the path set definition file, the control unit and command control address are also stored in the path set definition file for a device to which I/Os are issued, assumed by the system when a path set is loaded.

LOAD Option panel (when loading path sets)

In the LOAD Option panel, you can specify parameters for the `YKLOAD` command.

```
                         LOAD Option
Command ===> ____________________________________________________

Specify load option:

Path Set ID : PATHTEST

  Route List ID . . . . . . . . . . ________
  Route Label . . . . . . . . . . . ________
  All Commands via CDEV Function  . N

 F1=Help    F12=Cancel
```

For details about items to input, see Set Defaults panel (default settings for the site) on page 1-22.

Information specified in the LOAD Option panel will be cleared after you return to the Main Menu panel.

If no I/O destination volume is specified in the path set definition file, and the storage system at the primary site or secondary site is connected to a host when the path set is loaded, Business Continuity Manager assumes the I/O destination volume from the disk configuration definition file when path operation commands are executed.

Path Set Status panel

The Path Set Status panel displays the status of a path in a path set. In this panel, you can establish, delete, and update the selected logical path. You can also view details of the selected path.

```
                                Path Set Status                 Row 1 to 2 of 2
Command ===> ____________________________________________________ Scroll ===> PAGE

                                                              2008/02/28 16:55:33
Supported actions: s(Show detail), b(Build), d(Delete), q(Query)

Path Set ID  . . . : TESTPATH
Description  . . . : TEST PATH 1

        --- Primary ----     -- Secondary ---
AC Type SN    ID CU SSID Dir SN    ID CU SSID Status
_  CU   14002    00 2340 ->  14001    00 2350 ESTABLISHED 1/1 PORT(S)
_  DKC  14002 00         ->  14001 00         ESTABLISHED 1/1 PORT(S)
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F4=Refresh   F6=Sort      F7=Backward  F8=Forward
F12=Cancel
```

The following table lists and describes the items in the Path Set Status panel.

Item	Description
Path Set ID	Path set ID
Description	A description of the path set
AC	Specify an action.

Item		Description
		• s: Displays the Logical Path Status panel used to display status details for the logical path. • b: Executes the YKBLDPTH command and establish the selected logical path. The execution result is displayed on the same panel. • d: Executes the YKDELPTH command and delete the selected logical path. • q: Executes the YKQRYPTH command and update the status of the selected logical path. The execution result is displayed on the same panel. When actions are entered in multiple **AC** columns, each is processed in the order displayed.
Type		Type of path • CU: Inter-control unit logical path • DKC: Inter-disk controller logical path
Primary	**SN**	Serial number of the primary storage system
	ID	Primary path group ID (path group ID in the forward direction) When the path type is CU, nothing is displayed.
	CU	Primary control unit number Displays the number of the control unit in which a device exists to which the path operation command is issued. If the path type is DKC, the control unit number is displayed either when the control unit number is specified during the definition of a path or when the Business Continuity Manager host is connected via a direct channel to the target storage system.
	SSID	Primary SSID
Dir		Direction of the path
Secondary	**SN**	Serial number of the secondary storage system
	ID	Secondary path group ID (path group ID in the reverse direction) When the path type is CU, nothing is displayed.
	CU	Secondary control unit number Displays the number of the control unit in which a device exists to which the path operation command is issued. If the path type is DKC, the control unit number is displayed either when the control unit number is specified during the definition of a path or when the Business Continuity Manager host is connected via a direct channel to the target storage system.
	SSID	Secondary SSID
Status		Command execution results when b or d is specified for the **AC** column • *action-name* SUCCESSFULLY: The action (*action-name*) was successful. • *action-name* ERRORS *command-name* RC=*xx*#: The command (*command-name*) terminated abnormally, in the action (*action-name*).

Item	Description
	Corresponding status to the **Status** value of each physical path in the logical path when `q` is specified for the **AC** column • `NO PATH`: No physical path is defined. • `ESTABLISHED` *n*/*n* `PORT(S)`: All defined physical paths have been established (where *n* indicates the number of defined physical paths). • `ESTABLISHED` *m*/*n* `PORT(S)`: In the defined physical paths, only those established are displayed (where *m* indicates the number of physical paths in the `ESTABLISHED` status, and *n* indicates the number of defined physical paths). • `MISMATCH`: The physical paths in the path set definition file do not match the hardware settings. • `INVALID`: The status of the physical path is something other than `NO PATH`, `ESTABLISHED`, or `MISMATCH`, and an error has occurred on a physical path.

#: *xx* is a return code from each command.

In the initial state, the information is displayed in ascending order by EBCDIC code, in priority order as follows: **SN**, **ID**, and then **CU** for **Primary**.

When the **F6=Sort** key is pressed, the Sort Logical Paths in the Path Set panel for specifying the order for displaying logical paths is displayed. For more information on the Sort Logical Paths in the Path Set panel, see Sort Logical Paths in the Path Set panel on page 1-64.

You can use the `SORT` command in the Path Set Status panel. For details about how to use the `SORT` command, see Commands that can be used in the ISPF panels on page 1-4.

Logical Path Status panel

The Logical Path Status panel displays the status of physical paths in a logical path.

```
                              Logical Path Status              Row 1 to 1 of 1
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                        2008/03/11 19:46:06

Path Set ID  . . . : PATH
Description  . . . : PATH SET 1
Type . . . . . . . : DKC
            S/N      PathID  CU  SSID
Primary . : 64050    00
Secondary : 64051    00      00

Information:


Primary  Dir  Secondary  Status
11       ->   11         MISMATCH
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Logical Path Status panel.

Item		Description
Path Set ID		Path set ID
Description		A description of the path set
Type		Type of path • `CU`: Inter-control unit logical path • `DKC`: Inter-disk controller logical path
Primary	**S/N**	Serial number of the primary storage system
	PathID	Primary path group ID (path group ID in the forward direction) When the path type is `CU`, nothing is displayed.
	CU	Primary control unit number Displays the number of the control unit in which a device exists to which the path operation command is issued.
	SSID	Primary SSID
Secondary	**S/N**	Serial number of the secondary storage system
	PathID	Secondary path group ID (path group ID in the reverse direction) When the path type is `CU`, nothing is displayed.
	CU	Secondary control unit number Displays the number of the control unit in which a device exists to which the path operation command is issued.
	SSID	Secondary SSID
Information		Displays the number of physical paths defined for the storage system, if the number of physical paths detected by the storage system is greater than the number of paths defined in the path set definition file.
Primary		Primary port number
Dir		Direction of the path
Secondary		Secondary port number
Status		Status of a physical path • `NO PATH`: No physical path defined. • `ESTABLISHED`: The physical path has been established. • `INIT FAILED`: An initialization error has occurred. • `TIME OUT`: A timeout has occurred. • `NO RESOURCES AT PRI`: The port at the primary storage system is invalid. • `NO RESOURCES AT SEC`: The port at the secondary storage system is invalid. • `SERIAL# MISMATCH`: The storage system serial number does not match. • `CONFIG ERROR`: The interface ID is invalid. • `I/O ERROR`: Information could not be obtained due to an I/O error.

Item	Description
	• MISMATCH: The defined value and the value specified for the hardware do not match.

In the initial state, the information is displayed in ascending hexadecimal order, in priority order as follows: **Primary** (port number), and then **Secondary** (port number).

Manage Copy Groups panel (copy group operation)

In the Manage Copy Groups panel, you can perform operations on copy groups.

```
                              Manage Copy Groups             Row 1 to  3 of  3
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                            2017/01/17 11:59:48
Supported actions: l(Load), q(Query), m(Make), u(sUspend), r(Resync),
d(Dissolve), w(Watch), e(Ewait), c(reCover), v(query Verify), f(query Fast),
x(soft unfence), y(query fence)

AC Copy Group ID --------------------  Status ------------------------------
_  N@TC                                NOT LOADED
_  N@TC1                               NOT LOADED
_  N@UR                                NOT LOADED
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F6=Sort      F7=Backward  F8=Forward  F10=PrevInfo
F11=NextInfo F12=Cancel
```

Pressing the **F11=NextInfo** key displays **Description**. Pressing the **F10=PrevInfo** key returns to the previous display.

The following figure shows the Manage Copy Groups panel when the **F11=NextInfo** key is pressed.

```
                              Manage Copy Groups             Row 1 to  3 of  3
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                            2017/01/17 11:59:48
Supported actions: l(Load), q(Query), m(Make), u(sUspend), r(Resync),
d(Dissolve), w(Watch), e(Ewait), c(reCover), v(query Verify), f(query Fast),
x(soft unfence), y(query fence)

AC Copy Group ID --------------------  Description --------------------
_  N@TC                                COPY GROUP 1
_  N@TC1                               COPY GROUP 2
_  N@UR                                COPY GROUP 3
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F6=Sort      F7=Backward  F8=Forward  F10=PrevInfo
F11=NextInfo F12=Cancel
```

The following table lists and describes the items in the Manage Copy Groups panel.

Item	Description
AC	Specify an action. • `l`: Executes the `YKLOAD` command to load copy groups.[#1] The LOAD Option panel is displayed. • `q`: Executes the `YKQUERY` command to display the copy pair volume status. The Copy Group Status Summary panel is displayed.[#6] • `m`: Executes the `YKMAKE` command to create copy pairs. The Make Options panel is displayed. • `u`: Executes the `YKSUSPND` command to suspend copy pairs. The Suspension Options panel is displayed. • `r`: Executes the `YKRESYNC` command to re-synchronize copy pairs. The Resync Options panel is displayed. • `d`: Executes the `YKDELETE` command to dissolve copy pairs. • `w`: Executes the `YKWATCH` command to monitor the copy pair status change. The Watch Options panel is displayed. • `e`: Executes the `YKEWAIT` command to monitor the copy pair status change. The Wait Options panel is displayed. • `c`: Executes the `YKRECVER` command to dissolve copy pairs from the secondary site. • `v`: Executes the `YKQUERY` command , with the `VERIFY` parameter specified, to check the copy group configuration. If there is a configuration error, the `YKQUERY` command's return code and message are displayed on the Exception Message Panel. If there is no configuration error, the Copy Group Status Summary panel is displayed. • `f`: Executes the `YKEWAIT` command with the `TIMEOUT(0)` parameter specified to check the status of the copy group immediately. The Copy Group Status Summary panel is displayed. If there are many copy pairs, you can obtain the volume status more quickly by specifying `f` in **AC**, rather than by specifying `q`.[#2, #3] • `x`: Executes the `YKFENCE` command with the `SOFTUNFENCE` parameter specified to reset the soft fence of the P-VOL or the S-VOL of the copy pair. The Copy Group Soft Unfence Options panel is displayed. • `y`: Executes the `YKFENCE` command with the `QUERY` parameter specified to acquire the soft fence and SPID fence statuses of the copy pair. The Copy Group Fence Status Summary panel is displayed.
Copy Group ID	Copy group ID
Status	Execution result of the action specified for **AC** • `NOT LOADED`: The copy group has not been loaded. • `LOAD ERROR RC =` *xx*[#4]: An error occurred during loading the copy group. • `LOADED WITH WARNINGS RC =` *xx*: The copy group has been loaded with warning attached.

Item	Description
	• `LOADED`: The copy group has been loaded. • `ESTABLISH ERRORS. YKMAKE RC =` *xx*: Creating of a copy pair failed. • `ESTABLISHED`: Creating of a copy pair requested. • `ESTABLISHED(HOLD)`: Creating of a copy pair with `HOLD` specified was requested. • `SUSPEND ERRORS. YKSUSPND RC =` *xx*: Suspending of a copy pair failed. • `SUSPENDING`: Suspending of a copy pair requested. • `RESYNC ERRORS. YKRESYNC RC =` *xx*: Resynchronizing of a copy pair failed. • `RESYNC PENDING`: Pending of the resynchronizing of a copy pair requested. • `QUERY ERRORS. YKQUERY RC =` *xx*: Acquiring a copy pair status failed. • `QUERY ERRORS. YKEWAIT RC =` *xx*: Acquiring a copy pair status failed. • `QUERIED SUCCESSFULLY`: The copy pair status was acquired. • `DISSOLVE ERRORS. YKDELETE RC =` *xx*: Dissolving a copy pair failed. • `PAIRS DISSOLVED`: Dissolving a copy pair requested. • `EWAIT ERRORS. YKEWAIT RC =` *xx*: Monitoring of the volume status failed. • `EWAIT GOTO(`*status*#5`) SUCCESSFULLY`: The volume has moved to the specified volume status. • `RECOVER ERRORS. YKRECVER RC =` *xx*: An attempt to dissolve the copy pair from the Secondary site has failed. • `RECOVER SUCCESSFULLY`: A request was made to dissolve the copy pair from the Secondary site. • `SOFT UNFENCE ERRORS. YKFENCE RC =` *xx*: An attempt to reset the soft fence from the P-VOL or the S-VOL of the copy pair has failed. • `SOFT UNFENCED SUCCESSFULLY`: The soft fence of the P-VOL or the S-VOL of the copy pair was reset. • `QUERY ERRORS. YKFENCE RC =` *xx*: An attempt to acquire the soft fence status and SPID fence status of the copy pair has failed.
Description	A description of the copy group

#1: An error occurs if an attempt is made to load a copy group definition file that was not created by Business Continuity Manager.

#2: The following describes the differences between specifying `q` and `f` in **AC**:

- When `f` is specified, neither **Approx. Matching %** nor **CTDelta** is displayed on the Copy Group Status Summary panel.

- When `f` is specified, neither **Mat%** nor **CT Delta DDD HH:MM:SS** is displayed on the Copy Group Pair Status panel.
- When `f` is specified, EXCTG registration error checking is not performed on a copy group container with an EXCTG ID. If a copy pair has not been registered or is being registered in EXCTG, the `PENDING` status is reported when `q` is specified in **AC**, while the `DUPLEX` status might be reported when `f` is specified in **AC**.
- When `f` is specified, the Universal Replicator copy pair status at the time the ShadowImage copy pair is suspended is not checked for a ShadowImage copy group for which a `UR ATTIME` suspend time has been set.
- When `f` is specified and the copy type is SI, if an S-VOL forms a copy pair with a P-VOL other than the P-VOL in the copy group definition, you will not be able to get the correct copy pair status. In such cases, specifying `q` might return the `SIMPLEX` status for a particular copy group, but specifying `f` will return a value other than the `SIMPLEX` status for the same copy group.

#3: If you specify `f` for a TrueCopy copy group with a consistency group ID, use a route list that includes the storage systems where the TrueCopy copy group is defined. If `f` is specified and a route list is used that does not include these storage systems, the counts displayed for each copy pair status on the Copy Group Status Summary and Copy Group Storage System Summary panels, and the copy pair statuses displayed on the Copy Group Pair Status panel, will not be correct.

#4: *xx* is a return code from each command.

#5: The *status* is the status (`DUPLEX`, `SUSPEND`, `SIMPLEX`, `SUSPVS`, or `HOLD`) of the monitored copy group.

#6: After the action is finished for each copy pair in the Copy Group Pair Status panel, when you return to the Manage Copy Groups panel, **Status** displays the execution result of the `YKQUERY` command.

The `YKMAKE`, `YKSUSPND`, `YKRESYNC`, `YKDELETE`, and `YKRECVER` commands involve changing copy pair statuses. Status transition takes time, so be sure to use the `YKQUERY` command to check that the transition is complete.

Note: Do not dissolve copy pairs during planned outage operation (when switching the P-VOL and S-VOL). To dissolve the copy pair, switch the P-VOL and S-VOL again, return the P-VOL to the Primary site (restore normal operation), and then dissolve the copy pair.

If you press the **F6=Sort** key, the Sort the Copy Groups panel appears. In this panel, you can specify the order for displaying copy groups. For details about the Sort the Copy Groups panel, see Sort the Copy Groups panel on page 1-120.

You can use the `LOCATE`, `SELECT`, and `SORT` commands in the Manage Copy Groups panel. For details about how to use each command, see Commands that can be used in the ISPF panels on page 1-4.

You can specify the following fields for a sort key of the SORT command:

Name of field	Sorted by	Direction
CGID	Copy group ID	Ascending
STATUS	Result of action execution	Ascending

You can specify the following fields for a condition of the SELECT command:

Name of field	Value in field	Type
CGID	Copy group ID	Character string
STATUS	Result of action execution	Character string

If you omit the field name, CGID will be set as a default value.

Sort the Copy Groups panel

In the Sort the Copy Groups panel, you can specify a sort key for displaying copy groups.

```
            Sort the Copy Groups
Option ===> ______________________________

Select the desired sort sequence:
Choose one
1  Copy Group ID
2  Status

 F1=Help   F12=Cancel
```

In the Sort the Copy Groups panel, you can use the following items to select how to sort:

Item	Sorted by
1 Copy Group ID	Copy group ID
2 Status	Result of action execution

LOAD Option panel (when loading copy groups)

In the LOAD Option panel, you can specify parameters for the YKLOAD command.

```
                        LOAD Option
Command ===> ____________________________________________________

Specify load option:
Copy Group ID  : UR

  Route List ID . . . . . . . . . . ________
  Route Label . . . . . . . . . . . ________
  All Commands via CDEV Function  . N
```

```
F1=Help    F12=Cancel
```

For details about items to input, see Set Defaults panel (default settings for the site) on page 1-22.

Information specified in the LOAD Option panel will be cleared after you return to the Main Menu panel.

Panel transitions from the Copy Group Status Summary panel

The following figure shows the panel transitions starting from the Copy Group Status Summary panel.

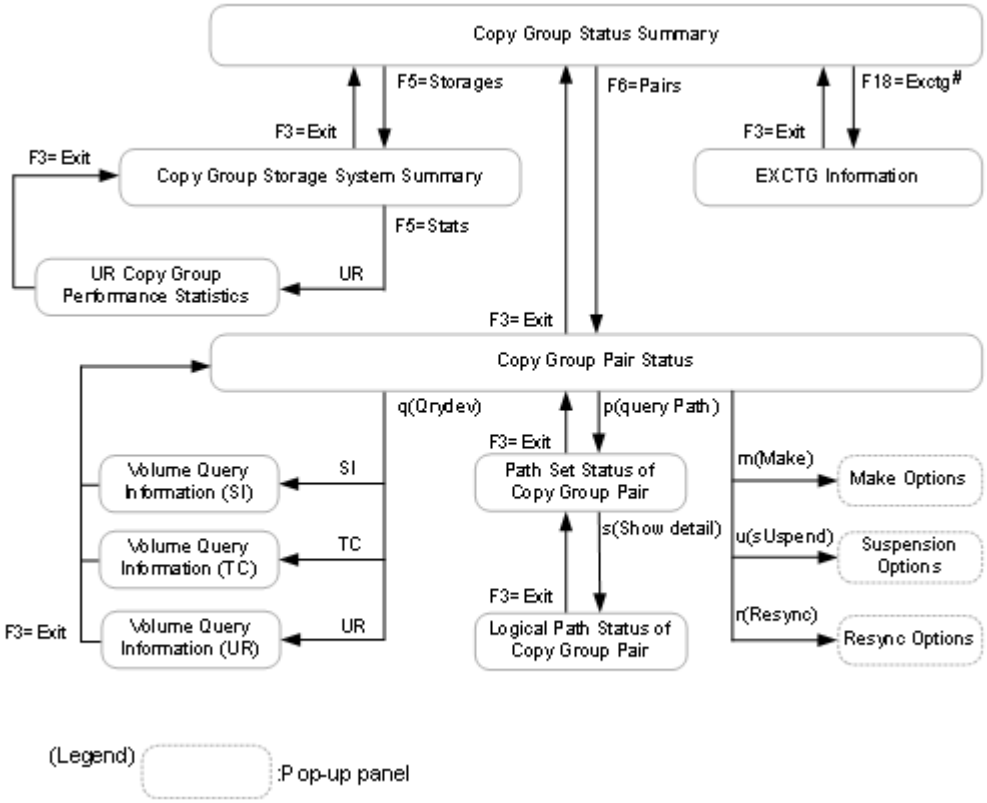


Figure 1-11 Panel transitions from the Copy Group Status Summary panel

#: The **F18=Exctg** key is enabled for copy group containers with EXCTG IDs.

Copy Group Status Summary panel

The Copy Group Status Summary panel displays the number of copy pairs in a copy group for each copy pair status.

```
                         Copy Group Status Summary
Command ===> ____________________________________________________________
                                                   2015/08/04 12:02:23
                     Copy Group ID: TC01
                       Description: COPY GROUP 1
        Primary Device Addr. Domain: SF
```

```
      Secondary Device Addr. Domain: LA

                                Copy Progress
                        Current Time: 20150804 12:02:23
                             CTDelta: 000 00:00:05
                  Approx. Matching %: 100%
                    Reversed Pairs %:   0%

                              Pair Status Counts
         Duplex:   120  |          Simplex:     0  |          Pending:     0
 Reverse Resync:     0  |          Suspend:     0  |    Suspend by CU:     0
        V-Split:     0  |    In Transition:     0  |         Swapping:     0
  Invalid State:     0  |         No Delta:     0  |

                             Volume Status Counts
      PriOnline:   120  |        SecOnline:     0  |

 F1=Help      F3=Exit      F4=Refresh   F5=Storage   F6=Pairs
```

The following table lists and describes the items in the Copy Group Status Summary panel.

Item		Description
Copy Group ID		Copy group ID
Description		A description of the copy group
Primary Device Addr. Domain		Primary device address domain ID
Secondary Device Addr. Domain		Secondary device address domain ID
Current Time		Current time
CTDelta #1		Proxy C/T delta value for the entire copy group#2, #3
Approx. Matching %		Copy pair matching rate in the applicable copy group#4 If `f` is specified in the Manage Copy Groups panel, `N/A` is displayed.
Reversed Pairs %		The ratio of copy pairs that the copy direction in `DUPLEX` status is in reversed direction in the corresponding copy group
Pair Status Counts	**Duplex**	Number of copy pairs in the `DUPLEX` status
	Simplex	Number of copy pairs in the `SIMPLEX` status
	Pending	Number of copy pairs in the `PENDING` status
	Reverse Resync	Number of copy pairs in the `REVRSY` status
	Suspend	Number of copy pairs in the `SUSPOP` status (includes the `HOLD` status)
	Suspend by CU	Number of copy pairs in the `SUSPCU` status
	V-Split	Number of copy pairs in the `SUSPVS` status

Item		Description
	In Transition	Number of copy pairs in the `TRANS` status (includes the `HOLDTRNS` status)
	Swapping	Number of copy pairs in the `SWAPPING` status
	Invalid State	Number of copy pairs in the `INVALID` status (includes the `SUSPER` status, `HOLDER` status, and `CONSLOST` status)
	No Delta	Number of copy pairs in the `NODELTA` status
Volume Status Counts	**PriOnline**	Number of copy pairs whose P-VOL is online
	SecOnline	Number of copy pairs whose S-VOL is online

#1: For Universal Replicator copy groups, the following table shows what is displayed for this item depending on the value specified for **C/T TIME MODE** in the Copy Group Attribute (UR) panel.

Value specified for C/T TIME MODE	Displayed value
`JOURNAL`	`CTDelta(JOURNAL)`
`VOLUME`	`CTDelta(VOLUME)`
`ASIS`	`CTDelta(ASIS)`

#2: The following table shows the proxy C/T delta values that are displayed:

Condition	Displayed value
Copy group container is not EXCTG.	Maximum C/T delta value for the entire consistency groups
EXCTG	Minimum C/T delta value for the entire consistency groups
Copy group contains one or more consistency groups for which C/T delta value cannot be acquired (consistency cannot be preserved).	`N/A`

For details about C/T delta values, see the explanation of **C/T delta** in Copy Group Pair Status panel on page 1-129.

#3: If you specify `f` for AC in the Manage Copy Groups panel, `N/A` is displayed.

#4: Average of the copy pair matching rates of all copy pairs in the corresponding copy group. Even if the copy pair matching rate is displayed as `100%`, confirm the status in **Pair Status Counts** because copy pairs in the suspend status might be included. If copy pairs other than ShadowImage are in the suspend status, the displayed values correspond to the amounts written to the P-VOL after the suspension, and do not include the amounts written to the S-VOL. When these copy pairs are resynchronized, the values might change, because the values corresponding to the amounts written to the P-VOL and S-VOL are adjusted when the differential copy is performed.

Copy Group Storage System Summary panel

The Copy Group Storage System Summary panel displays the number of copy pairs that are in individual copy pair statuses for each storage system.

```
                    Copy Group Storage System Summary            Row 1 to 1 of 1
 Command ===> ________________________________________________ Scroll ===> PAGE

                                                            2015/08/04 12:04:08
 Current Time  . . . . . . . . . . : 20150804 12:04:08
 Copy Group ID . . . . . . . . . . : UR
 Description . . . . . . . . . . . : COPY GROUP 1
 Primary Device Addr. Domain . . : SF
 Secondary Device Addr. Domain . : LA
 ------------------------------------------------------------------------------
 Pri - Sec - ------------------------- State Counts -------------------------
 SN    SN    Duplx Pend  SusOp Swap  VSplt RvRsc Smplx SusCu Trans Error NoDlt
 64051 64052     0     0     0     0     0     0     3     0     0     0     0
 ****************************** Bottom of data ********************************

  F1=Help      F3=Exit      F4=Refresh   F5=Stats     F7=Backward  F8=Forward
F10=Prev     F11=Next
```

The following figure shows the Copy Group Storage System Summary panel when the **F11=Next** key is pressed.

```
                    Copy Group Storage System Summary            Row 1 to 1 of 1
 Command ===> ________________________________________________ Scroll ===> PAGE

                                                            2015/08/04 12:04:10
 Current Time  . . . . . . . . . . : 20150804 12:04:10
 Copy Group ID . . . . . . . . . . : UR
 Description . . . . . . . . . . . : COPY GROUP 1
 Primary Device Addr. Domain . . : SF
 Secondary Device Addr. Domain . : LA
 ------------------------------------------------------------------------------
 Pri - Sec - ------------------------- State Counts -------------------------
 SN    SN    PriON SecON
 64051 64052     3     0
 ****************************** Bottom of data ********************************

  F1=Help      F3=Exit      F4=Refresh   F5=Stats     F7=Backward  F8=Forward
F10=Prev     F11=Next
```

The following table lists and describes the items in the Copy Group Storage System Summary panel.

Item	Description
Current Time	Current time
Copy Group ID	Copy group ID
Description	A description of the copy group
Primary Device Addr. Domain	Primary device address domain ID
Secondary Device Addr. Domain	Secondary device address domain ID
Pri-SN	Serial number of the primary storage system
Sec-SN	Serial number of the secondary storage system

Item		Description
State Counts	**Duplx**	Number of copy pairs in the DUPLEX status
	Pend	Number of copy pairs in the PENDING status
	SusOp	Number of copy pairs in the SUSPOP status (includes the HOLD status)
	Swap	Number of copy pairs in the SWAPPING status
	VSplt	Number of copy pairs in the SUSPVS status
	RvRsc	Number of copy pairs in the REVRSY status
	Smplx	Number of copy pairs in the SIMPLEX status
	SusCu	Number of copy pairs in the SUSPCU status
	Trans	Number of copy pairs in the TRANS status (includes the HOLDTRNS status)
	Error	Number of copy pairs in the INVALID status (includes the SUSPER status, HOLDER status, and CONSLOST status)
	NoDlt	Number of copy pairs in the NODELTA status
	PriON	Number of P-VOLs whose status is online
	SecON	Number of S-VOLs whose status is online

UR Copy Group Performance Statistics panel

The UR Copy Group Performance Statistics panel displays performance information of Universal Replicator copy groups.

```
                    UR Copy Group Performance Statistics      Row 1 to 1 of 1
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                          2018/03/23 14:20:16
Current Time  . . . . . . . . . . : 20180323 14:20:16
Copy Group ID . . . . . . . . . . : UR
Primary Device Addr. Domain . . : DADP
Secondary Device Addr. Domain . : DADR
--------------------------------------------------------------------------------
                                     Pri %s  Sec %s  - Pri GB - - Sec GB -
C/T ID Pri - Sec - --- Data Trans --- JNL-VOL JNL-VOL -- JNL-VOL -- JNL-VOL
   sub SN    SN    Kbytes/s Pri  Sec  MET DAT MET DAT        DAT        DAT
0C 0C  10007 10037       49 OK   OK     0   0   0   0          3          3
****************************** Bottom of data ******************************

 F1=Help      F3=Exit      F4=Refresh   F6=Sort      F7=Backward  F8=Forward
```

The following table lists and describes the items in the UR Copy Group Performance Statistics panel.

Item	Description
Current Time	Current time
Copy Group ID	Copy group ID

Item			Description
Primary Device Addr. Domain			Primary device address domain ID in the copy group definition file
Secondary Device Addr. Domain			Secondary device address domain ID in the copy group definition file
C/T ID			Consistency group ID in the copy group definition file
sub C/T ID			Sub consistency group ID in the copy group definition file
Pri-SN			Storage system serial number of the copy source
Sec-SN			Storage system serial number of the copy target
Data Trans	**Kbytes/s**		Data transfer rate between **Pri-SN** and **Sec-SN** (KB/s).
	Pri		Operating information between journal groups on **Pri-SN**: • `OK`: Data transfer between journal groups is proceeding normally. • `NG`: Data transfer is not proceeding normally, possibly because a path between storage systems is temporarily out of service. • `STOP`: Data transfer has stopped, as for example if all volumes in a journal group have been suspended. • `N/A`: Operating information could not be obtained.
	Sec		Operating information between journal groups on **Sec-SN**: • `OK`: Data transfer between journal groups is proceeding normally. • `NG`: Data transfer is not proceeding normally, possibly because a path between storage systems is temporarily out of service. • `STOP`: Data transfer has stopped, as for example if all volumes in a journal group have been suspended. • `N/A`: Operating information could not be obtained.
Pri %s	**JNL-VOL**	**MET**	Journal group metadata usage rate for **Pri-SN**. The percentage used of the Journal Metadata capacity available in the Journal Volume(s) registered to M-JNL.
		DAT	Journal group data usage rate for **Pri-SN**. The percentage used of the Journal Data capacity available in the Journal Volume(s) registered to M-JNL.
Sec %s	**JNL-VOL**	**MET**	Journal group metadata usage rate for **Sec-SN**. The percentage used of the Journal Metadata capacity available in the Journal Volume(s) registered to R-JNL.
		DAT	Journal group data usage rate for **Sec-SN**. The percentage used of the Journal Data capacity available in the Journal Volume(s) registered to R-JNL.

Item		Description
Pri GB	**JNL-VOL-DA**	Capacity (in GB) that can be used as journal data, out of the journal volumes registered in the journal group to which the journal group volume of **Pri-SN** belongs
Sec GB	**JNL-VOL-DA**	Capacity (in GB) that can be used as journal data, out of the journal volumes registered in the journal group to which the journal group volume of **Sec-SN** belongs

Note:

- For **Pri-SN** and **Sec-SN**, information acquired from the storage system is displayed. If the copy direction is opposite to the direction specified in the copy group definition file, the secondary and primary storage system serial numbers in the copy group definition file are displayed for **Pri-SN** and **Sec-SN**, respectively.
- The columns where information is not acquired by storage system and the columns for copy groups that contain a copy pair whose copy type is not Universal Replicator might display `N/A` because the values for those columns are not guaranteed.
- When you display the data transfer rate of Universal Replicator in this panel, the Usage Monitor for the control unit (to which the journal volume used by the copy group definition file belongs) must be started from Storage Navigator, and have the data capture interval set to 10 minutes or less.
- The storage system serial number displays the value set in the configuration file.
- If an operation is performed on each copy pair or the copy pair directions in the copy group are mixed, the value for the copy group cannot be guaranteed because the copy pair direction statuses in the copy group do not match. Match the copy pair statuses and copy pair directions in the copy group and then re-execute.
- Information on the secondary site and the data transfer rate between the primary storage system and the secondary storage system cannot be obtained from the Delta Resync pair. Therefore, `N/A` is displayed for the secondary site items, and the transfer rate between the primary storage system and the secondary storage system.

If you press the **F6=Sort** key, the Sort UR Copy Group Statistics panel appears. In this panel, you can specify the order for displaying Universal Replicator copy groups. For details about the Sort UR Copy Group Statistics panel, see Sort UR Copy Group Statistics panel on page 1-128.

You can use the `LOCATE` and `SORT` commands in the UR Copy Group Performance Statistics panel. For details about how to use each command, see Commands that can be used in the ISPF panels on page 1-4.

You can specify the following fields for a sort key of the `SORT` command:

Name of field	Sorted by	Direction
CTID	Consistency group ID of the primary journal group in the copy group definition file	Ascending
SUBCTID	Consistency group ID of the secondary journal group in the copy group definition file	Ascending
PSN	Serial number of the storage system for **Pri-SN**	Ascending
SSN	Serial number of the storage system for **Sec-SN**	Ascending
TRANS	Data transfer rate between **Pri-SN** and **Sec-SN** (KB/s)	Ascending
PJNLMETR	Metadata usage rate of the journal group for **Pri-SN**	Ascending
SJNLMETR	Metadata usage rate of the journal group for **Sec-SN**	Ascending
PJNLDATR	Journal data usage rate for the journal group for **Pri-SN**	Ascending
SJNLDATR	Journal data usage rate for the journal group for **Sec-SN**	Ascending
PJNLDATC	Capacity that can be used as journal data for **Pri-SN** (in GB)	Ascending
SJNLDATC	Capacity that can be used as journal data for **Sec-SN** (in GB)	Ascending

Sort UR Copy Group Statistics panel

In the Sort UR Copy Group Statistics panel, you can specify a sort key for displaying Universal Replicator copy groups.

```
            Sort UR Copy Group Statistics
Option ===> ________________________________________

Select the desired sort sequence:
Choose one
1  C/T Group ID of M-JNL
2  C/T Group ID of R-JNL
3  M-Storage System S/N
4  R-Storage System S/N
5  Transfer Rate(M-JNL->R-JNL Kbytes/s)
6  JNL-Vol Usage Rate for M-Metadata
7  JNL-Vol Usage Rate for R-Metadata
8  JNL-Vol Usage Rate for M-JNL Data
9  JNL-Vol Usage Rate for R-JNL Data
10 Data capacity in the M-JNL volume (GB)
11 Data capacity in the R-JNL volume (GB)

 F1=Help   F12=Cancel
```

In the Sort UR Copy Group Statistics panel, you can select the sorting order from the following items.

Item	Sort order
1. C/T Group ID of M-JNL	Consistency group IDs of the primary journal group in the copy group definition file
2. C/T Group ID of R-JNL	Consistency group IDs of the secondary journal group in the copy group definition file
3. M-Storage System S/N	Serial number of the storage system for **Pri-SN**
4. R-Storage System S/N	Serial number of the storage system for **Sec-SN**
5. Transfer Rate(M-JNL->R-JNL Kbytes/s)	In order of the data transfer rates between **Pri-SN** and **Sec-SN** (KB/s)
6. JNL-Vol Usage Rate for M-Metadata	Metadata usage rate of the journal group for **Pri-SN**
7. JNL-Vol Usage Rate for R-Metadata	Metadata usage rate of the journal group for **Sec-SN**
8. JNL-Vol Usage Rate for M-JNL Data	Journal data usage rate of the journal group for **Pri-SN**
9. JNL-Vol Usage Rate for R-JNL Data	Journal data usage rate of the journal group for **Sec-SN**
10. Data capacity in the M-JNL volume (GB)	In order of the available capacity of journal data for **Pri-SN** (in GB)
11. Data capacity in the R-JNL volume (GB)	In order of the available capacity of journal data for **Sec-SN** (in GB)

Copy Group Pair Status panel

The Copy Group Pair Status panel displays the status of each copy pair. You can perform operations on copy pairs on a copy pair basis.

```
                              Copy Group Pair Status             Row 1 to 2 of 2
 Command ===> ___________________________________________________ Scroll ===> PAGE

                                                        2015/08/04 12:04:16
 Supported actions: q(Qrydev), m(Make), u(sUspend), r(Resync), d(Dissolve),
 c(reCover), p(query Path)

 Copy Group ID . . : UR
 Description . . . : COPY GROUP 1
 Status Time . . . : 20150804 12:04:05
 Primary SCHSET : 0  Secondary SCHSET : 0
 ------------------------------------------------------------------------------
     C/T ID          Mat CT Delta            Pri  O E     Sec  O E AC Result
 AC     sub State    %   DDD HH:MM:SS VOLSER Devn N X Dir Devn N X Action   RC
 _          SIMPLEX  000                     113B + -  >  0F1B - -
 _          SIMPLEX  000                     113C + -  >  0F1C - -
******************************* Bottom of data ********************************
  F1=Help      F3=Exit      F4=Refresh   F6=Sort      F7=Backward  F8=Forward
```

The following table lists and describes the items in the Copy Group Pair Status panel.

Item	Description
Copy Group ID	Copy group ID
Description	A description of the copy group
Status Time	The item corresponding to the displayed status time
Primary SCHSET	Primary subchannel set ID
Secondary SCHSET	Secondary subchannel set ID
AC	Specify an action. The following commands can be executed for individual copy pairs: • `q`: Executes the `YKQRYDEV` command to display the copy pair volume status. The Volume Query Information panel is displayed. • `m`: Executes the `YKMAKE` command to create copy pairs. The Make Options panel is displayed. • `u`: Executes the `YKSUSPND` command to suspend copy pairs. The Suspension Options panel is displayed. • `r`: Executes the `YKRESYNC` command to re-synchronize copy pairs. The Resync Options panel is displayed. • `d`: Executes the `YKDELETE` command to dissolve copy pairs.[#1] • `c`: Executes the `YKRECVER` command to dissolve copy pairs from the secondary site. • `p`: Executes the `YKQRYDEV` command with the `PATH` parameter specified in order to obtain the logical path information that is used by copy pairs. The Path Set Status of Copy Group Pair panel is displayed.
C/T ID	Consistency group ID at definition
sub	Sub consistency group ID at definition
State	Copy pair status
Mat%	Copy pair matching rate[#2, #3] If the copy type is Universal Replicator and the copy status is `DUPLEX`, `100` is displayed.
CT Delta **DDD HH:MM:SS**	Displays the difference between the consistency time of the suspended S-VOLs and the current time when a copy pair is suspended in Universal Replicator.[#3] When ShadowImage (SI) or TrueCopy (TC), or information cannot be acquired from the Secondary site, (for example, the command device is not defined), it is not displayed. Only if the consistency group timer type is `SYSTEM`, it is displayed. For Universal Replicator, the type of consistency time to be used differs depending on the value specified in **C/T TIME MODE** of the Copy Group Attribute (UR) panel. For details about the consistency time, see the *TrueCopy for Mainframe User Guide*.
VOLSER	Volume serial number
Pri Devn	P-VOL device number

Item		Description
ON		Host connection status of the P-VOL • +: Online • –: Offline • Blank: Host connection status is unknown.
EX		Displays the following information that indicates whether the P-VOL is an external volume. • +: An external volume • –: Not an external volume • Blank: The volume attribute is unknown.
Dir		Copy direction in the copy pair This information is changed by the `YKQUERY` command or `YKEWAIT` command.
Sec Devn		S-VOL device number
ON		Host connection status of the S-VOL • +: Online • –: Offline • Blank: Host connection status is unknown.
EX		Displays the following information that indicates whether the S-VOL is an external volume. • +: An external volume • –: Not an external volume • Blank: The volume attribute is unknown.
AC Result	**Action**	Executed action
	RC	Execution results for the executed action[#4, #5] If the **F12=Cancel** key is pressed in the Pop-up panel displayed during action specification, the displayed action results are not updated.

#1: If you perform operations for a copy group belonging to a pair dissolved on a copy pair basis, by the time the copy pair is recreated, be sure to specify the `SELECT(COND)` parameter.

Note: Do not dissolve copy pairs during planned outage operation (when switching the P-VOL and S-VOL). To dissolve the copy pair, switch the P-VOL and S-VOL again, return the P-VOL to the Primary site (restore normal operation), and then dissolve the copy pair.

#2: If the correct value could not be acquired from the primary site, `000` is displayed. If copy pairs other than ShadowImage are in the suspend status, the displayed values correspond to the amounts written to the P-VOL after the suspension, and do not include the amounts written to the S-VOL. When these copy pairs are resynchronized, the values might change, because the values corresponding to the amounts written to the P-VOL and S-VOL are adjusted when the differential copy is performed.

#3: If `f` is specified in the Manage Copy Groups panel, `N/A` is displayed.

#4: If the specified action has been aborted, the execution result (**RC**) is not displayed correctly.

#5: The following table lists the return codes when `p` is specified for **AC**.

Return code	Meaning
`00`	Successful completion. If no path information is displayed, then there is no path used by the copy pair selected in the Copy Group Pair Status panel.
`04`	Path information cannot be displayed. The cause for this is either of the following: • The device information during definition, as indicated by **Primary Volume/Secondary Volume** in the Volume Query Information panel, differs from the device information obtained from the storage system. View the Volume Query Information panel for the relevant copy pair to check the configuration file in use, as well as the actual storage system configuration information and settings. • If the device indicated by **Primary Volume/Secondary Volume** in the Volume Query Information panel is a remote site, then either the route list is not specified, or the storage system to which the device belongs is not registered in the route list specified in the `YKLOAD` command.
Other than the above	Return code of the `YKQRYDEV` command.

If you press the **F6=Sort** key, the Sort the Copy Group Pairs Status panel appears. In this panel, you can specify the order for displaying copy pairs. For details about the Sort the Copy Group Pairs Status panel, see Sort the Copy Group Pairs Status panel on page 1-133.

You can use the `LOCATE`, `SELECT`, and `SORT` commands in the Copy Group Pair Status panel. For details about how to use each command, see Commands that can be used in the ISPF panels on page 1-4.

You can specify the following fields for the sort key of the `SORT` command:

Name of field	Sorted by	Direction
`STATE`	Copy pair status	Ascending
`PDEVN`	Device number of the P-VOL	Ascending
`VOLSER`	Volume serial number of the P-VOL	Ascending
`SDEVN`	Device number of the S-VOL	Ascending
`CTID`	Consistency group ID	Ascending
`SUBCTID`	Sub consistency group ID	Ascending
`DIR` or `DIR(>)`	Copy direction (> then <)	--
`DIR(<)`	Copy direction (< then >)	--

Name of field	Sorted by	Direction
RC	Return code from action execution	Descending
PRIEX	+, –, or blank in the **EX** for P-VOL	--
SECEX	+, –, or blank in the **EX** for S-VOL	--
PRION	+, –, or blank in the **ON** for P-VOL	--
SECON	+, –, or blank in the **ON** for S-VOL	--

You can specify the following fields for a condition of the SELECT command:

Name of field	Value in field	Type
STATE	Copy pair status	Character string
PDEVN	Device number of the P-VOL	Hexadecimal
VOLSER	Volume serial number of the P-VOL	Character string
SDEVN	Device number of the S-VOL	Hexadecimal
CTID	Consistency group ID	Hexadecimal
SUBCTID	Sub consistency group ID	Hexadecimal
DIR	Copy direction (<, >)	Character string
RC	Return code from action execution	Decimal
PRIEX	+, –, or blank in the **EX** for P-VOL	Character string
SECEX	+, –, or blank in the **EX** for S-VOL	Character string
PRION	+, –, or blank in the **ON** for P-VOL	Character string
SECON	+, –, or blank in the **ON** for S-VOL	Character string

If you omit the field name, PDEVN will be set as a default value.

Note: When using the LOCATE command and the SELECT command, you cannot specify a negative decimal value for RC field.

Sort the Copy Group Pairs Status panel

In the Sort the Copy Group Pairs Status panel, you can specify a sort key for displaying copy pairs.

```
          Sort the Copy Group Pairs Status
Option ===> ________________________________________

Select the desired sort sequence:
Choose one
1  Copy Pair State
2  Primary Device Number
3  Primary Volume Serial Number
4  Secondary Device Number
5  C/T ID
6  sub C/T ID
```

```
 7  Dir(>)
 8  Dir(<)
 9  AC Result
 10 Primary external volume information
 11 Secondary external volume information
 12 Primary online volume
 13 Secondary online volume

  F1=Help   F12=Cancel
```

The following table lists and describes the items in the Sort the Copy Group Pairs Status panel.

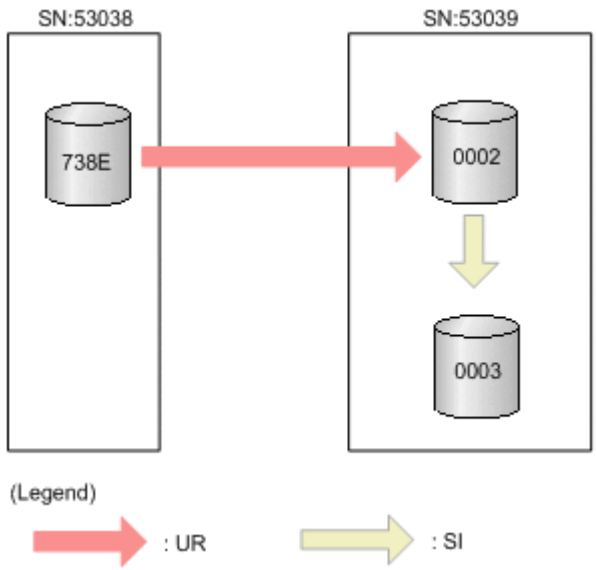
In the Sort the Copy Group Pairs Status panel, you can select the sorting order from the following items.

Item	Sort order
1. Copy Pair State	The order of the copy pair status
2. Primary Device Number	The order of P-VOL device number.
3. Primary Volume Serial Number	The order of P-VOL volume serial number.
4. Secondary Device Number	The order of S-VOL device number.
5. C/T ID	The order of consistency group ID.
6. sub C/T ID	The order of sub consistency group ID.
7. Dir(>)	The order indicated by the copy direction of > in **DIR**.
8. Dir(<)	The order indicated by the copy direction of < in **DIR**.
9. AC Result	Descending order of the return code from the action execution.
10. Primary external volume information	+, –, or blank in the **EX** for P-VOL
11. Secondary external volume information	+, –, or blank in the **EX** for S-VOL
12. Primary online volume	+, –, or blank in the **ON** for P-VOL
13. Secondary online volume	+, –, or blank in the **ON** for S-VOL

Volume Query Information (SI) panel

The Volume Query Information (SI) panel displays information about ShadowImage copy pairs.

The following figure shows a configuration example and the Volume Query Information (SI) panel displayed in this configuration.




```
                         Volume Query Information (SI)          Row 1 to 1 of 1
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                              2017/11/20 16:13:37
Copy Group ID . . . . . . . . . . : SI
Copy Type(in Configuration): SI    Copy Type(from Storage System) : SI
---- Primary Volume ----     --- Secondary Volume ---
SN    SSID CU CCA DEVN   Dir SN    SSID CU CCA DEVN
53039 000E 08 01  00002-  >  53039 000E 08 02  00003-
Status: DUPLEX (02)          Status: DUPLEX (02)
Suspend ATTIME (GMT)   : 20120327 07:32:42.000000 -WAITING
               (LOCAL) : 20120327 16:32:42.000000
Preset Mode : UR(STEADY)   Status : N/A
C/T ID  PROT MODE  COPY PACE  GENID
04      PERMIT     NORMAL     00

Other CopyPair Information
            ----- Primary/Secondary ------       ----- Pair Volume -----
Type C/T ID     SN    DEVN   Status         Dir  SN    SSID CU CCA DEVN
UR   1C  1C Pri 53039 00002- DUPLEX (02)     <   53038 000D 08 01  N/A
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F4=Refresh   F7=Backward  F8=Forward
```

The following table lists and describes the items in the Volume Query Information (SI) panel.

Item		Description
Copy Group ID		Copy group ID
Copy Type (in Configuration)		Copy group type at definition
Copy Type (from Storage System)		Copy types held by the storage system#6
Primary Volume	**SN**	Storage system serial number of the P-VOL at definition
	SSID	SSID of the P-VOL at definition
	CU	Control unit number of the P-VOL at definition
	CCA	Command control address of the P-VOL at definition

Item		Description
	DEVN	Subchannel set ID and device number of the P-VOL at definition The following volume online information is displayed to the right of **DEVN**: • `*`: Online • `-`: Offline Nothing is displayed when volume online information cannot be obtained.
	Status	Copy pair status[#4, #7]
Dir		Copy direction in the copy pair Always displays `>` when the **Status** of the **Primary Volume** is `SIMPLEX`.
Secondary Volume	**SN**	Storage system serial number of the S-VOL at definition
	SSID	SSID of the S-VOL at definition
	CU	Control unit number of the S-VOL at definition
	CCA	Command control address of the S-VOL at definition
	DEVN	Subchannel set ID and device number of the S-VOL at definition The following volume online information is displayed to the right of **DEVN**: • `*`: Online • `-`: Offline Nothing is displayed when volume online information cannot be obtained.
	Status	Copy pair status[#4, #7] `JOURNAL` is displayed for the journal volume.[#5]
Suspend ATTIME		ATTIME suspend time and ATTIME suspend status On the first line: `(GMT)`: *ATTIME-suspend-time-in-GMT* `-` *ATTIME-suspend-status* For *ATTIME-suspend-time-in-GMT* `-` *ATTIME-suspend-status*, one of the following is displayed: • `Notset`: ATTIME suspend time is not set. • *ATTIME-suspend-time* `-WAITING`: ATTIME suspend has not been executed. • *ATTIME-suspend-time* `-TIMESTAMP TRIGGERED`: A suspension was performed at *ATTIME-suspend-time*. • *ATTIME-suspend-time* `-TIMEOUT TRIGGERED`: A suspension was performed due to a timeout or because the Universal Replicator copy pair was in the suspend status at the ATTIME suspend time. • *ATTIME-suspend-time* `-NO I/O TRIGGERED`: A suspension was performed because no-update journal was detected. • `N/A`: One of the following conditions applies: - This copy pair is not a ShadowImage copy pair with a consistency group ID.

Item	Description
	- The user does not have permission to access the copy type. - The copy pair was not created. On the second line: `(LOCAL)`: *ATTIME-suspend-time-in-local-time* Format of the ATTIME suspend time: *YYYYMMDD HH*:*MM*:*SS*.*NNNNNN* • *YYYY*: The year is displayed. • *MM*: The month is displayed. • *DD*: The date is displayed. • *HH*: The hour is displayed. • *MM*: The minute is displayed. • *SS*.*NNNNNN*: The second is displayed.
Preset Mode	Type of ATTIME Suspend function used • `UR(STEADY)`: The UR ATTIME Suspend function is used. The suspension is activated in STEADY mode. • `UR(QUICK)`: The UR ATTIME Suspend function is used. The suspension is activated in QUICK mode. • `NORMAL`: The NORMAL ATTIME Suspend function is used. • `N/A`: One of the following conditions applies: - The ATTIME Suspend function is not used. - The user does not have permission to access the copy type. - The copy pair was not created.
Status	The Universal Replicator copy pair status and consistency time when the ShadowImage copy pair was suspended in cases where UR ATTIME suspend was used. • `DUPLEX`: When the ShadowImage copy pair was suspended, all Universal Replicator copy pairs were in `DUPLEX` status (consistency time was invalid). If the consistency time was invalid because the volume was not updated after the Universal Replicator copy pair was created, or for a similar reason, the consistency time for Universal Replicator is not displayed. • `DUPLEX` *consistency-time-of-UR-copy-pairs*: When the ShadowImage copy pair was suspended, all Universal Replicator copy pairs were in `DUPLEX` status (consistency time was valid). Universal Replicator consistency time format: *YYYYMMDD HH*:*MM*:*SS*.*NNNNNN* `(GMT)` - *YYYY*: The year is displayed. - *MM*: The month is displayed. - *DD*: The date is displayed. - *HH*: The hour is displayed. - *MM*: Minutes are displayed. - *SS*.*NNNNNN*: Seconds are displayed. • `UNEXPECTED`: When the ShadowImage copy pair was suspended, some Universal Replicator copy pairs were not in `DUPLEX` status.

Item			Description
			• ERROR(0001): Since the ShadowImage copy pair status is invalid, suspend processing for the ShadowImage copy pair was abnormally terminated. • ERROR(0002): Since a storage system-derived error occurred, suspend processing for the ShadowImage copy pair was abnormally terminated. Contact the storage administrator. • N/A: One of the following conditions applies: - The UR ATTIME Suspend function is not used. - Suspension of the ShadowImage copy pair has not started. - The ShadowImage copy pair has been suspended. - The user does not have permission to access the copy type. - The copy pair was not created.
C/T ID			consistency group ID#6
PROT MODE			Write-protect for the S-VOL#3, #6 • PROTECT: Update of the S-VOL is prohibited after the copy pair is suspended (YKSUSPND command is executed). • PERMIT: Update of the S-VOL is allowed after the copy pair is suspended (YKSUSPND command is executed).
COPY PACE			Pace of copying#3, #6 • SLOW: Slows the speed of the copy operation so that the effect of the copy operation on the I/O performance of the host is minimal. • NORMAL: The speed of the copy operation improves. However, update I/O load on P-VOL is high, and this might affect the I/O performance of the host. • FAST: Specifying FAST speeds up the copy operation so that it is faster than NORMAL. However, specifying FAST adversely affects the I/O performance of the host.
GEN ID			Generation ID#6
Other CopyPair Information#1	**Primary/ Secondary**	**Type**	The following information is displayed if there are any other copy pairs apart from the one specified in the Copy Group Pair Status panel on page 1-129. • Copy type • Indication of whether it is information on the P-VOL or S-VOL (Pri or Sec)
		C/T ID	consistency group ID and sub consistency group ID
		SN	• For Primary: storage system serial number for the P-VOL of the copy pair specified in the Copy Group Pair Status panel on page 1-129 • For Secondary: storage system serial number for the S-VOL of the copy pair specified in the Copy Group Pair Status panel
		DEVN	• For Primary: Subchannel set ID and device number for P-VOL of the copy pair specified in the Copy Group Pair Status panel on page 1-129

Item			Description
			• For Secondary: Subchannel set ID and device number of S-VOL for the copy pair specified in the Copy Group Pair Status panel The following volume online information is displayed to the right of **DEVN**: • `*`: Online • `-`: Offline Nothing is displayed when volume online information cannot be obtained.
		Status	Copy pair status#2, #4
	Dir		Copy direction in the copy pair
	Pair Volume	**SN**	Storage system serial number of the volume which creates a copy pair
		SSID	SSID of the volume which creates a copy pair
		CU	Control unit number of the volume which creates a copy pair
		CCA	Command control address of the volume which creates a copy pair
		DEVN	Subchannel set ID and device number of the volume which creates a copy pair

#1: It is displayed if P-VOL or S-VOL is shared with other copy pairs in the definition.

#2: `MISMATCH` might be displayed. This happens when the device information during definition, as indicated by **Primary Volume and Secondary Volume**, differs from the device information reported by the storage system. In this case, the device information reported by the storage system is displayed in the **Pair Volume** column. If `MISMATCH` is displayed, check the configuration file used, as well as the actual storage system configuration information and settings.

#3: The timing for when the defined values are reflected is as shown in section Copy Group Attributes panel and Copy Group Attributes For Container panel on page 1-74, in the table item labeled *When effective*.

#4: For details about the status of the displayed copy pair, see the table (for ShadowImage) that shows the copy pair statuses of volumes obtained by using the `YKQRYDEV` command in the *Hitachi Business Continuity Manager User Guide*. Note that when the device is a command device, `CDEV(`*apid*`)` is displayed in the **Status** column.

#5: If the emulation type of the journal volume is OPEN, `JOURNAL` is not displayed.

Note: `N/A` displays in the Device Information (DEVN) field in the following cases:

- When the `YKQRYDEV` command returns an error

- When displaying information about a device of a remote storage system if the route list has not been loaded or the target storage system is not included in the route list
- When displaying information about a Non Gen'ed volume, and the route list has not been loaded or the target storage system is not included in the route list

#6: If the user does not have permission to access the copy type or if the copy pair was not created, `N/A` is displayed.

#7: If the user does not have permission to access the copy type, `SIMPLEX` is displayed.

Volume Query Information (TC) panel

The Volume Query Information (TC) panel displays information about TrueCopy copy pairs.

```
                         Volume Query Information (TC)
Command ===> ____________________________________________________ Scroll ===> PAGE

                                                          2017/11/20 16:30:24
Copy Group ID . . . . . . . . . . : TC1
Copy Type(in Configuration): TC    Copy Type(from Storage System) : TC
---- Primary Volume ----     --- Secondary Volume ---
SN    SSID CU CCA DEVN   Dir SN    SSID CU CCA DEVN
10037 000A 07 0F  00002-  >  10007 000C 07 01  01301-
Status: PENDING (01)         Status: PENDING (01)

C/T ID  PROT MODE  COPY PACE  FENCE LVL  Freeze SCP  DIF UNIT  CONSLOST(P-S)
0C      PROTECT    NORMAL     NEVER      Y           CYL       N-N

Other CopyPair Information
            ----- Primary/Secondary ------       ----- Pair Volume -----
Type C/T ID     SN    DEVN   Status         Dir  SN    SSID CU CCA DEVN
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F4=Refresh   F7=Backward  F8=Forward
```

The following table lists and describes the items in the Volume Query Information (TC) panel.

Item		Description
Copy Group ID		Copy group ID
Copy Type (in Configuration)		Copy group type at definition
Copy Type (from Storage System)		Copy types held by the storage system#7
Primary Volume	**SN**	Storage system serial number of the P-VOL at definition
	SSID	SSID of the P-VOL at definition
	CU	Control unit number of the P-VOL at definition
	CCA	Command control address of the P-VOL at definition
	DEVN	Subchannel set ID and device number of the P-VOL at definition

Item		Description
		The following volume online information is displayed to the right of **DEVN**: • `*`: Online • `-`: Offline Nothing is displayed when volume online information cannot be obtained.
	Status	Copy pair status[#4, #8]
Dir		Copy direction in the copy pair Always displays `>` when the **Status** of the **Primary Volume** is `SIMPLEX`.
Secondary Volume	**SN**	Storage system serial number of the S-VOL at definition
	SSID	SSID of the S-VOL at definition
	CU	Control unit number of the S-VOL at definition
	CCA	Command control address of the S-VOL at definition
	DEVN	Subchannel set ID and device number of the S-VOL at definition The following volume online information is displayed to the right of **DEVN**: • `*`: Online • `-`: Offline Nothing is displayed when volume online information cannot be obtained.
	Status	Copy pair status[#4, #8] `JOURNAL` is displayed for the journal volume.[#5]
C/T ID		Consistency group ID[#7]
PROT MODE[#6]		Write-protect for the S-VOL[#3, #7] • `PROTECT`: Update of the S-VOL is prohibited after the copy pair is suspended (`YKSUSPND` command is executed) • `PERMIT`: Update of the S-VOL is allowed after the copy pair is suspended (`YKSUSPND` command is executed)
COPY PACE		Pace of copying[#3, #7] • `NORMAL`: The speed of the copy operation improves. However, update I/O load on P-VOL is high, and this might affect the I/O performance of the host. • `SLOW`: Slows the speed of the copy operation so that the effect of the copy operation on the I/O performance of the host is minimal.
FENCE LVL		Fence level[#3, #7] • `DATA`: Places P-VOL in fence status (updates suppressed) when updates in P-VOL cannot be copied to S-VOL due to a problem such as a failure. • `STATUS`: Places P-VOL in fence status (updates suppressed) when updates in P-VOL cannot be copied to S-VOL due to a

Item			Description
			problem such as a failure. If the operation from the primary site attains the suspend status, updates to P-VOL are accepted. • NEVER: P-VOL is never in fence status (updates suppressed). When a copy pair is suspended, updates to P-VOL are accepted.
Freeze SCP#6			Freeze the storage system (place in SCP status) when a failure suspension (SUSPER) occurs.#3 • Y: Places in SCP status. • N: Does not place in SCP status. N/A is displayed if one of the following conditions applies: • The consistency group ID is not registered in the storage system. • The Open/MF Consistency Preservation function is not used. • Information cannot be acquired. • The user does not have permission to access the copy type. • The copy pair was not created.
DIF UNIT			Difference management unit#3, #7
CONSLOST(P-S)			Whether data on the P-VOL and the S-VOL is inconsistent (the CONSLOST status) due to the copy process of the related FlashCopy® being interrupted during execution of the Preserve Mirror function. • Y: Copy process of the related FlashCopy® was interrupted. • N: Normal status This item is displayed in the format *P-VOL-status–S-VOL-status*. N/A is displayed if one of the following conditions applies: • SIMPLEX is displayed for **Status** under both **Primary Volume** and **Secondary Volume**. • The information cannot be obtained. • The user does not have permission to access the copy type. • The copy pair was not created.
Other CopyPair Informatio n#1	**Primary/ Secondary**	**Type**	The following information is displayed if there are any other copy pairs apart from the one specified in the Copy Group Pair Status panel on page 1-129. • Copy type • Indication of whether it is information on the P-VOL or S-VOL (Pri or Sec)
		C/T ID	Consistency group ID and sub consistency group ID
		SN	• For Primary: Storage system serial number for the P-VOL of the copy pair specified in the Copy Group Pair Status panel on page 1-129 • For Secondary: Storage system serial number for the S-VOL of the copy pair specified in the Copy Group Pair Status panel

Item			Description
		DEVN	• For Primary: Subchannel set ID and device number for P-VOL of the copy pair specified in the Copy Group Pair Status panel on page 1-129 • For Secondary: Subchannel set ID and device number for S-VOL of the copy pair specified in the Copy Group Pair Status panel The following volume online information is displayed to the right of **DEVN**: • `*`: Online • `-`: Offline Nothing is displayed when volume online information cannot be obtained.
		Status	Copy pair status#2, #4
	Dir		Copy direction in the copy pair
	Pair Volume	**SN**	Storage system serial number of the volume which creates a copy pair
		SSID	SSID for the volume which creates a copy pair
		CU	Control unit number of the volume which creates a copy pair
		CCA	Command control address of the volume which creates a copy pair
		DEVN	Subchannel set ID and device number of the volume which creates a copy pair

#1: It is displayed if P-VOL or S-VOL is shared with other copy pairs in the definition.

#2: `MISMATCH` might be displayed. This happens when the device information during definition, as indicated by **Primary Volume** and **Secondary Volume**, differs from the device information reported by the storage system. In this case, the device information reported by the storage system is displayed in the **Pair Volume** column. If `MISMATCH` is displayed, check the configuration file used, as well as the actual storage system configuration information and settings.

#3: The timing for when the defined values are reflected is as shown in section Copy Group Attributes panel and Copy Group Attributes For Container panel on page 1-74, in the table item of *When effective*.

#4: For details about the status of the displayed copy pair, see the table (for TrueCopy) that shows the copy pair statuses of volumes obtained by using the `YKQRYDEV` command in the *Hitachi Business Continuity Manager User Guide*. Note that when the device is a command device, `CDEV(`*apid*`)` is displayed in the **Status** column.

#5: If the emulation type of the journal volume is OPEN, `JOURNAL` is not displayed.

#6: This value is invalid for TrueCopy copy pairs with the HyperSwap attribute.

Note: In the following cases, N/A is displayed for the device information.

- When the YKQRYDEV command returns an error
- When displaying information about a device of a remote storage system if the route list has not been loaded or the target storage system is not included in the route list

#7: If the user does not have permission to access the copy type or if the copy pair was not created, N/A is displayed.

#8: If the user does not have permission to access the copy type, SIMPLEX is displayed.

Volume Query Information (UR) panel

The Volume Query Information (UR) panel displays information about Universal Replicator copy pairs.

```
                         Volume Query Information (UR)          Row 1 to 1 of 1
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                              2017/11/20 09:55:08
Copy Group ID . . . . . . . . . . : UR
Copy Type(in Configuration): UR    Copy Type(from Storage System) : UR
---- Primary Volume ----     --- Secondary Volume ---
SN    SSID CU CCA DEVN   Dir SN    SSID CU CCA DEVN
10037 000A 07 0F  00002-  >  10007 000C 07 01  01301-
Status: DUPLEX (02)          Status: DUPLEX (02)

Consistency Time (GMT) : 20120327 00:55:06.190322
               (LOCAL) : 20120327 09:55:06.190322
EXCTG ID (F,R):   3 ,   3 (in Configuration)   3 ,   3 (from Storage System)
EXCTG(F-R) : active(1,1) - N/A(N/A,1)
C/T  ID  ERROR LVL  TIMER TYPE(F-R)  PROT MODE  Path ID
0C   0C  GROUP      SYSTEM - SYSTEM  PROTECT    00

Other CopyPair Information
            ----- Primary/Secondary ------       ----- Pair Volume -----
Type C/T ID     SN    DEVN   Status         Dir  SN    SSID CU CCA DEVN
SI          Pri 10037 00002- SUSPOP (04)     >   10037 000A 07 10  00003
****************************** Bottom of data ********************************

 F1=Help      F3=Exit      F4=Refresh   F7=Backward  F8=Forward
```

The following table lists and describes the items in the Volume Query Information (UR) panel.

Item		Description
Copy Group ID		Copy group ID
Copy Type (in Configuration)		Copy type at definition
Copy Type (from Storage System)		Copy types held by the storage system#7
Primary Volume	**SN**	Storage system serial number of the P-VOL at definition
	SSID	SSID of the P-VOL at definition
	CU	Control unit number of the P-VOL at definition

Item		Description
	CCA	Command control address of the P-VOL at definition
	DEVN	Subchannel set ID and device number of the P-VOL at definition The following volume online information is displayed to the right of **DEVN**: • `*`: Online • `-`: Offline Nothing is displayed when volume online information cannot be obtained.
	Status	Copy pair status[#4, #8]
Dir		Copy direction in the copy pair Always displays `>` when the **Status** of the **Primary Volume** is `SIMPLEX`.
Secondary Volume	**SN**	Storage system serial number of the S-VOL at definition
	SSID	SSID of the S-VOL at definition
	CU	Control unit number of the S-VOL at definition
	CCA	Command control address of the S-VOL at definition
	DEVN	Subchannel set ID and device number of the S-VOL at definition The following volume online information is displayed to the right of **DEVN**: • `*`: Online • `-`: Offline Nothing is displayed when volume online information cannot be obtained.
	Status	Copy pair status[#4, #8] `JOURNAL` is displayed for the journal volume.[#5]
Consistency Time		Consistency time • On the first line: `(GMT)`: *consistency-time-in-GMT* • On the second line: `(LOCAL)`: *consistency-time-in-local-time* The type of consistency time to be used differs depending on the value specified in **C/T TIME MODE** of the Copy Group Attribute (UR) panel. `N/A` is displayed if one of the following conditions applies: • The consistency time is invalid. • The copy pair is a Delta Resync pair. • The user does not have permission to access the copy type. • The copy pair was not created.
EXCTG ID (F,R)	*F*, *R* **(in Configuration)**	Defined EXCTG ID • *F*: EXCTG ID in the forward direction • *R*: EXCTG ID in the reverse direction `N/A` is displayed if one of the following conditions applies:

Item			Description
			• EXCTG is not registered in the storage system. • The user does not have permission to access the copy type. • The copy pair was not created.
	F, *R* **(from Storage System)**		EXCTG ID that has been registered in a storage system • *F*: EXCTG ID in the forward direction • *R*: EXCTG ID in the reverse direction `N/A` is displayed if one of the following conditions applies: • EXCTG is not registered in the storage system. • The user does not have permission to access the copy type. • The copy pair was not created. • The information cannot be obtained.
EXCTG(F-R)			EXCTG registration status, in both the forward (F) and reverse (R) directions#6, #7
C/T ID			Consistency group ID and sub consistency group ID#7
ERROR LVL			Error level#3, #7 • `VOLUME`: When a failure occurs, only the affected volumes are suspended. • `GROUP`: When a failure occurs, all volumes in the same copy group are suspended.
TIMER TYPE(F-R)			Consistency group timer type in both the forward (F) and reverse (R) directions#7 • `SYSTEM`: Uses a timestamp to maintain consistency. • `LOCAL`: Uses the storage system's internal clock to maintain consistency. • `NONE`: Does not maintain consistency. The timer type obtained from the storage system is displayed. `N/A` is displayed when a reverse direction timer type cannot be obtained.
PROT MODE			Write-protect for the S-VOL#3, #7 • `PROTECT`: Update of the S-VOL is prohibited after the copy pair is suspended (`YKSUSPND` command is executed). • `PERMIT`: Update of the S-VOL is allowed after the copy pair is suspended (`YKSUSPND` command is executed).
Path ID			Path group ID#7
Other CopyPair Information#1	**Primary/ Secondary**	**Type**	The following information is displayed if there are any other copy pairs apart from the one specified in the Copy Group Pair Status panel on page 1-129. • Copy type • Indication of whether it is information on the P-VOL or S-VOL (`Pri` or `Sec`)
		C/T ID	Consistency group ID and sub consistency group ID

Item			Description
		SN	• For Primary: Storage system serial number of the P-VOL of the copy pair specified in the Copy Group Pair Status panel on page 1-129 • For Secondary: Storage system serial number of the S-VOL of the copy pair specified in the Copy Group Pair Status panel
		DEVN	• For Primary: Subchannel set ID and device number of the P-VOL of the copy pair specified in the Copy Group Pair Status panel on page 1-129 • For Secondary: Subchannel set ID and device number of the S-VOL of the copy pair specified in the Copy Group Pair Status panel The following volume online information is displayed to the right of **DEVN**: • `*`: Online • `-`: Offline Nothing is displayed when volume online information cannot be obtained.
		Status	Copy pair status#2, #4
	Dir		Copy direction in the copy pair
	Pair Volume	**SN**	Storage system serial number of the volume that creates a copy pair
		SSID	SSID of the volume that creates a copy pair
		CU	Control unit number of the volume that creates a copy pair
		CCA	Command control address of the volume that creates a copy pair
		DEVN	Subchannel set ID and device number of the volume that creates a copy pair

#1: Displayed if P-VOL or S-VOL is shared with other copy pairs in the definition.

#2: `MISMATCH` might be displayed. This happens when the device information at definition, as indicated by **Primary Volume** and **Secondary Volume**, differs from the device information reported by the storage system. In this case, the device information reported by the storage system is displayed in the **Pair Volume** column. If `MISMATCH` is displayed, check the configuration file used, as well as the actual storage system configuration information and settings.

#3: The timing for when the defined values are reflected is as described in section Copy Group Attributes panel and Copy Group Attributes For Container panel on page 1-74, in the table item of When effective.

#4: For details about the status of the displayed copy pair, see the table (for Universal Replicator) that shows the copy pair statuses of volumes obtained by using the `YKQRYDEV` command in the *Hitachi Business Continuity Manager User Guide*. Note that when the device is a command device, `CDEV(`*apid*`)` is displayed in the **Status** column.

#5: If the emulation type of the journal volume is OPEN, `JOURNAL` is not displayed.

#6: The following format shows the registration status of the restore journal group of the Universal Replicator copy pair in EXCTG:

status1(flag1,flag2) - status2(flag3,flag4)

status1: Indicates whether the journal group of the copy destination volume has been registered in a storage system as EXCTG when a copy is being performed in the forward direction. The characters displayed in *status1* are determined according to the values for *flag1* and *flag2*.

- `active`: The journal group has been registered in a storage system as EXCTG. This copy pair is ready to be used by 4x4 Universal Replicator in the forward direction.
- `inactive`: The journal group has not been registered, a registration error occurred or the user added information later. This copy pair is not ready to be used by 4x4 Universal Replicator in the forward direction.
- `invalid`: Invalid status
- `N/A`: Unable to identify the status.

flag1: Indicates, by using a flag, whether the journal group of the copy destination volume has been registered in a storage system as EXCTG when a copy is being performed in the forward direction. This information is held by the copy source volume.

- `0`: The journal group has not been registered in a storage system as EXCTG.
- `1`: The journal group has been registered in a storage system as EXCTG.
- `N/A`: Unable to identify the status.

flag2: Indicates, by using a flag, whether the journal group of the copy destination volume has been registered in a storage system as EXCTG when a copy is being performed in the forward direction. This information is held by the copy destination volume.

- `0`: The journal group has not been registered in a storage system as EXCTG.
- `1`: The journal group has been registered in a storage system as EXCTG.
- `N/A`: Unable to identify the status.

status2: Indicates whether the journal group of the copy destination volume has been registered in a storage system as EXCTG when a copy is being performed in the reverse direction. The characters displayed in *status2* are determined according to the values for *flag3* and *flag4*.

- `active`: The journal group has been registered in a storage system as EXCTG. This copy pair is ready to be used by 4x4 Universal Replicator in the reverse direction.

- `inactive`: The journal group has not been registered, a registration error occurred or user added information later. This copy pair is not ready to be used by 4x4 Universal Replicator in the reverse direction.
- `invalid`: Invalid status
- `N/A`: Unable to identify the status.

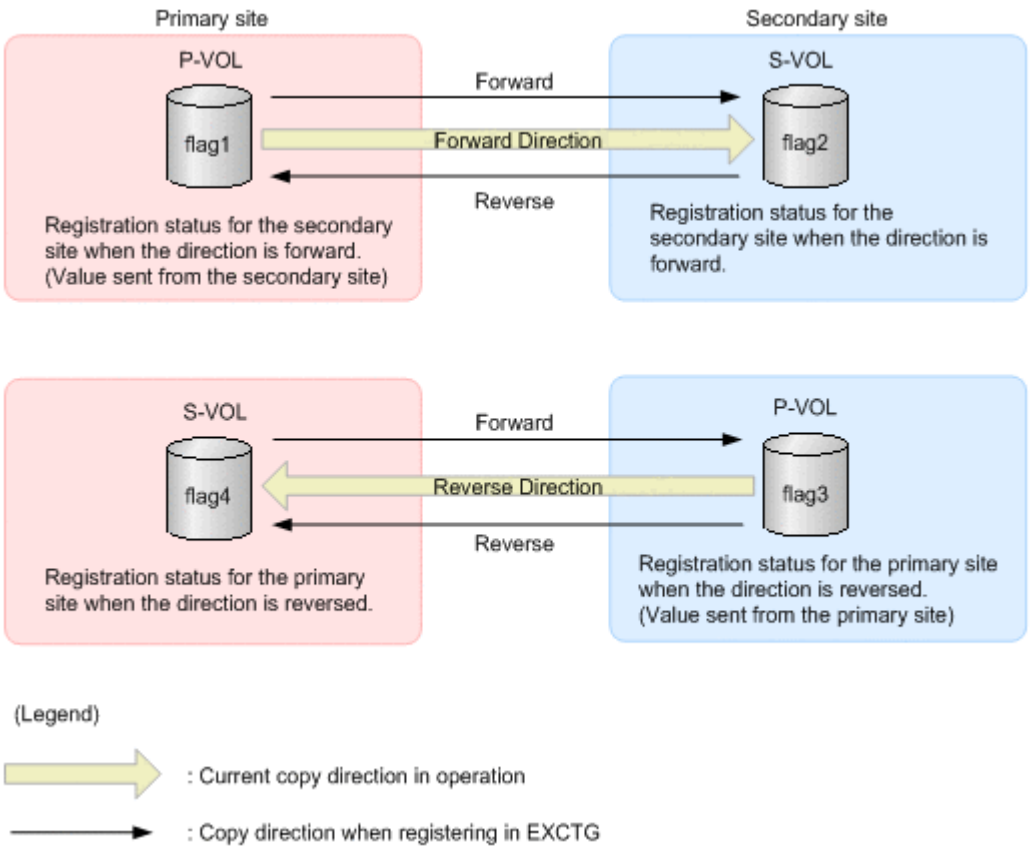
flag3: Indicates, by using a flag, whether the journal group of the copy destination volume is registered in a storage system as EXCTG when a copy is being performed in the reverse direction. This information is held by the copy source volume.

- `0`: The journal group has not been registered in a storage system as EXCTG.
- `1`: The journal group has been registered in a storage system as EXCTG.
- `N/A`: Unable to identify the status.

flag4: Indicates, by using a flag, whether the journal group of the copy destination volume is registered in a storage system as EXCTG when a copy is being performed in the reverse direction. This information is held by the copy destination volume.

- `0`: The journal group has not been registered in a storage system as EXCTG.
- `1`: The journal group has been registered in a storage system as EXCTG.
- `N/A`: Unable to identify the status.

The meanings of the flags indicated above are shown in the following diagram.



If the journal group is normally registered in a storage system as EXCTG, the information will be displayed as follows:

When the copy is being performed in the forward direction: `active(1,1) - N/A(N/A,1)`

When the copy is being performed in the reverse direction: `N/A(N/A,1) - active(1,1)`

Note:

- For *flag1*and *flag3*, information is obtained in the following situations:
  - For P-VOL
  - When the Universal Replicator copy pair status is `PENDING` or `DUPLEX`
- If none of these situations apply, `N/A` is displayed.
- `N/A` displays in the Device Information (DEVN) field in the following cases:
  - When the `YKQRYDEV` command returns an error
  - When displaying information about a device of a remote storage system if the route list has not been loaded or the target storage system is not included in the route list

#7: If the user does not have permission to access the copy type or if the copy pair was not created, `N/A` is displayed.

#8: If the user does not have permission to access the copy type, `SIMPLEX` is displayed.

Make Options panel

In the Make Options panel, you can specify parameters for the `YKMAKE` command.

SI Copy Group Make Options panel

```
                SI Copy Group Make Options
Command ===> ____________________________________________

Select pair establishment options:
Copy Group ID  : GRP2RSI

  Initial Copy Option:
  1  1. Full Copy
     2. No Copy

  Pair Selection:          Copy Pace:
  1  1. All                2  1. Slow
     2. Conditional           2. Normal
                              3. Fast

  Overwrite ONLINE target volume . . N

 F1=Help      F12=Cancel
```

TC Copy Group Make Options panel

```
                      TC Copy Group Make Options
Command ===> ____________________________________________________________

Select pair establishment options:
Copy Group ID  : TC

  Initial Copy Option:
  1  1. Full Copy
     2. No Copy

  Direction Option:        Pair Selection:          Copy Pace:
  1  1. Forward            1  1. All                2  1. Slow
     2. Reverse               2. Conditional           2. Normal


  Overwrite ONLINE target volume . . N

 F1=Help   F12=Cancel
```

UR Copy Group Make Options panel displayed from the Copy Group Pair Status panel

```
                UR Copy Group Make Options
Command ===> ____________________________________________

Select pair establishment options:
Copy Group ID  : UR

  Initial Copy Option:
  1  1. Full Copy
     2. No Copy
     3. Delta Resync Relation Make
```

```
  Direction Option:        Pair Selection:
  1  1. Forward            1  1. All
     2. Reverse               2. Conditional

  Overwrite ONLINE target volume . . N


 F1=Help   F12=Cancel
```

UR Copy Group Make Options panel displayed from the Manage Copy Groups panel

```
                UR Copy Group Make Options
Command ===> ____________________________________________

Select pair establishment options:
Copy Group ID  : UR

  Initial Copy Option:
  1  1. Full Copy
     2. No Copy
     3. Delta Resync Relation Make

  Direction Option:        Pair Selection:
  1  1. Forward            1  1. All
     2. Reverse               2. Conditional

  Overwrite ONLINE target volume . . N
  Dispersed across JNLGs . . . . . . N

 F1=Help   F12=Cancel
```

The following table lists and describes the items in the Make Options panel.

Item	Description
Copy Group ID	Copy group ID
Initial Copy Option	Specify the `NOCOPY` or `HOLD` parameter of the `YKMAKE` command. • `Full Copy`: Makes a copy pair by full copy. • `No Copy`: Makes a copy pair without copying the volume (the `NOCOPY` parameter is specified). • `Delta Resync Relation Make`: Makes a delta resync pair (the `HOLD` parameter is specified). You can specify the `HOLD` parameter in Universal Replicator.
Direction Option	Specify the direction of the copy (default is `Forward`). • `Forward`: Copies the contents of the Primary site to the Secondary site. • `Reverse`: Copies the contents of the Secondary site to the Primary site.
Pair Selection	Specify `SELECT` parameter of `YKMAKE` command i.e. how to select a copy pair to be manipulated. • `All`: Select all copy pairs as targets.

Item	Description
	• `Conditional`: Select target copy pairs based on the volume status of the copy pair.#
Overwrite ONLINE target volume	When the S-VOL is online, determine whether to create a copy pair (default is `N`). • `Y`: Creates the copy pair even if the S-VOL is online. • `N`: Do not create the copy pair if the S-VOL is online.
Dispersed across JNLGs	Specify the order for creating the copy pair (default is `N`). • `Y`: Creates the copy pair so that the journal group to which the volume belongs is dispersed. • `N`: Creates the copy pair in the order defined in the copy group definition file.
Copy Pace	Specify the copy pace when creating a copy pair (default value is the copy pace value specified when the copy group was defined). • `Slow`: Slows the speed of the copy operation so that the effect of the copy operation on the I/O performance of the host is minimal. • `Normal`: The speed of the copy operation improves. However, update I/O load on P-VOL is high, and this might affect the I/O performance of the host. • `Fast`: Specifying `Fast` speeds up the copy operation so that it is faster than `Normal`. However, specifying `Fast` adversely affects the I/O performance of the host. Because specifying `Fast` might adversely affect business operations, we recommend that you perform copy pair operations outside of business hours.

#: If **Conditional** is selected and the **Enter** key is pressed, Business Continuity Manager checks whether the immediately preceding copy pair status was acquired. If it was not acquired, that copy pair status is automatically acquired.

Note: Remember the following while performing copy operations:
While copying from a small capacity volume to a large volume in TrueCopy or Universal Replicator, if a failure occurs on the Secondary site, TrueCopy or Universal Replicator cannot be executed in the reverse direction from the Secondary site to the Primary site. This copying function, copying from a small volume to a large volume, should be executed only for data migration purposes. You cannot specify the `SVOL(PERMIT)` and `REVERSE` parameters of `YKSUSPND` command while copying from a small volume to a large volume is in progress in TrueCopy.

Suspension Options panel

In the Suspension Options panel, you can specify parameters for the `YKSUSPND` command.

SI Copy Group Suspension Options panel

```
            SI Copy Group Suspension Options
Command ===> ____________________________________________

Select suspension options:
Copy Group ID  : SI

  Suspend Option:
  1  1. Steady
     2. Quick

  Secondary Volumes R/W:     Pair Selection:
  2  1. Protect              1  1. All
     2. Permit                  2. Conditional

  VolUnit  . . . . N

 F1=Help   F12=Cancel
```

SI with C/T Copy Group Suspension Options panel

```
                SI with C/T Copy Group Suspension Options
Command ===> ____________________________________________________________

Select suspension options:
Copy Group ID  : SIC

  Secondary Volumes R/W:     Pair Selection:     Suspend Option:
  2  1. Protect              1  1. All           1  1. Steady
     2. Permit                  2. Conditional      2. Quick
                                                    3. Preset
  Preset Options:                                   4. Cancel Preset
   Preset Date YYYYMMDD  2008/03/19
   Preset Time HHMMSS    21:43:28        Preset Mode . . 1  1. Normal
   Plus Minutes MMMM     0___                               2. UR(Steady)
   Plus Seconds SS       0_                                 3. UR(Quick)
   Timeout Minutes MMMM  0___            Generation ID  . . 00
   LOCAL or GMT  . . . . 1  1. LOCAL
                            2. GMT       VolUnit  . . . . . N

 F1=Help    F12=Cancel
```

TC Copy Group Suspension Options panel

```
            TC Copy Group Suspension Options
Command ===> ____________________________________________

Select suspension options:
Copy Group ID  : TC

  Suspend Option:
  1  1. Forward
     2. Reverse

  Secondary Volumes R/W:        Pair Selection:
  1  1. Protect                 1  1. All
     2. Permit                     2. Conditional

  VolUnit  . . . . N

 F1=Help   F12=Cancel
```

UR Copy Group Suspension Options panel displayed from the Manage Copy Groups panel

```
                    UR Copy Group Suspension Options
Command ===> ____________________________________________________________

Select suspension options:
Copy Group ID  : UR

                           Secondary Volumes
  Suspend Option:          R/W:                      Pair Selection:
  1  1. Flush              1  1. Protect             1  1. All
     2. Purge                 2. Permit                 2. Conditional
     3. Forward
     4. Reverse                                      VolUnit  . . . N

 F1=Help    F12=Cancel
```

UR Copy Group Suspension Options panel displayed from the Copy Group Pair Status panel

```
                    UR Copy Group Suspension Options
Command ===> ____________________________________________________________

Select suspension options:
Copy Group ID  : UR

                           Secondary Volumes
  Suspend Option:          R/W:                      Pair Selection:
  1  1. Flush              1  1. Protect             1  1. All
     2. Forward               2. Permit                 2. Conditional
     3. Reverse

 F1=Help    F12=Cancel
```

The following table lists and describes the items in the Suspension Options panel.

Item	Description
Copy Group ID	Copy group ID
Suspend Option	Specify the parameter of the `YKSUSPND` command by using the number: • `Steady`: Moves to `SUSPOP` status after copying data. • `Quick`: Moves quickly to `SUSPOP` status in the ShadowImage data copy. • `Drain`: Suspends after reflecting the unreflected data. • `Purge`: Suspends, discarding the unreflected data. • `Preset`: Uses the ATTIME Suspend function. The suspend time of the ATTIME Suspend function specified in **Preset Mode** will be set. • `Cancel Preset`: Cancels the ATTIME suspend time. The ATTIME suspend time for either the NORMAL ATTIME Suspend function or the UR ATTIME Suspend function that has been set will be canceled, regardless of the specification in **Preset Mode**.

Item	Description
	• `Forward`: Makes copy direction from Primary site to Secondary site after resynchronizing a copy pair. • `Reverse`: Makes copy direction from Secondary site to Primary site after resynchronizing a copy pair. • `Flush`: Suspends after reflecting the unreflected data up to the time of the suspend request. Note 1: The `Preset` and `Cancel Preset` are effective for ShadowImage copy groups with a consistency group ID, and can be specified for a remote storage system only when the UR ATTIME Suspend function is used. Note that this setting is released by P/S ON/OFF in the primary storage system. Note 2: Use **Preset Mode** to specify whether the status of a ShadowImage copy group for which `Preset` has been specified will change to the `SUSPOP` status after the data has been completely copied (`Steady`), or the status will immediately change to the `SUSPOP` status (`Quick`).
Secondary Volumes R/W	Specify the `SVOL` parameter of the `YKSUSPND` command (option for S-VOL update s when suspended) by using the number. • `Protect`: Prohibits updates. • `Permit`: Permits updates. `Preset` and `Cancel Preset` of the **Suspend Option** cannot be specified at the same time.
Pair Selection	Specify the `SELECT` parameter of the `YKSUSPND` command (that is, how to select a copy pair to be manipulated) by using the number. • `All`: Select all copy pairs as targets. • `Conditional`: Select target copy pairs based on the volume status of the copy pair.#
Preset Date YYYYMMDD **Preset Time HHMMSS** **Plus Minutes MMMM** **Plus Seconds SS**	Specify the `ATTIME` parameter (ATTIME suspend time) of the `YKSUSPND` command. Before the `ATTIME` parameter is specified, the current date and time are displayed in **Preset Date** and **Preset Time**, respectively. Scheduled suspend time is determined by **Preset Date**, and **Preset Time** by adding **Plus Minutes** and **Plus Seconds**. An ATTIME suspend time more than 65,536 minutes after the execution of command cannot be specified. If the UR ATTIME Suspend function is not used, this cannot be specified for a remote storage system. To check the specified time in another way, see the ISPF log. Format of the ATTIME suspend time is as follows: • **YYYY**: Specify the year (`1970` to `2042`). • **MM**: Specify the month (`01` to `12`). • **DD**: Specify the date (`01` to `31`). • **HH**: Specify the time (`00` to `23`). • **MM**: Specify the minute (`00` to `59`). • **SS**: Specify the second (`00` to `59`).

Item	Description
	• **MMMM**: Specify the offset value to be added to the ATTIME suspend time in minute (`0000` to `1439`). • **SS**: Specify the offset value to be added to the ATTIME suspend time in second (`00` to `59`).
Timeout Minutes MMMM	Specify the `TIMEOUT` parameter of the `YKSUSPND` command in minutes (from `0` to `9999`). The specified value is used as the timeout value when the UR ATTIME Suspend function is used.
LOCAL or GMT	Specify the `ATTIME` parameter (the time used as the ATTIME suspend time) of the `YKSUSPND` command by using the number. • `LOCAL`: Uses the local time as the ATTIME suspend time. • `GMT`: Uses Greenwich Mean Time as the ATTIME suspend time.
Preset Mode	Specify the value of the `YKSUSPND` command `ATOPT` parameter that corresponds to the type of ATTIME Suspend function you want to use. • `NORMAL`: Uses the NORMAL ATTIME Suspend function. For details on whether the secondary volumes can be accessed or updated while a ShadowImage copy group for which `NORMAL` is specified is being transitioned to suspend mode, see the *ShadowImage for Mainframe User Guide*. • `UR(Steady)`: Uses the UR ATTIME Suspend function. The copy group runs in STEADY mode during its transition to suspend mode. • `UR(Quick)`: Uses the UR ATTIME Suspend function. The copy group runs in QUICK mode during its transition to suspend mode. When a ShadowImage copy group for which the ATTIME function is not enabled is being used, use **Suspend Option** to specify the mode that is active during the transition to suspend mode.
Generation ID	Specify the `GENID` parameter of the `YKSUSPND` command (from `00` to `FF`). The specified value is used as the number for identifying backup generations.
VolUnit	Specify the `VOLUNIT` parameter of the `YKSUSPND` command: • `Y`: Performs operations on a volume basis, even for an environment that supports operations on a group basis during specification. An error will occur if you perform a suspend operation that reverses the copy direction for Universal Replicator copy groups after resynchronization. • `N`: Performs operations on a group basis if this is supported by the environment. If the `Preset` is specified for the **Suspend Option**, `VolUnit` will be disregarded even when set to `Y`.

#: If **Conditional** is selected and the **Enter** key is pressed, Business Continuity Manager checks whether the immediately preceding copy pair

status was acquired. If it was not acquired, that copy pair status is automatically acquired.

The ATTIME parameter can be added or cancelled for ShadowImage copy groups with a consistency group ID.

The YKSUSPND command terminates successfully when the instruction to the copy pair succeeded. Even if the command has terminated successfully, make sure that the transition of the copy pair status was performed, using the YKQUERY command or the YKEWAIT command. If there is a volume with a status that has not been changed, re-execute the YKSUSPND command with the VOLUNIT parameter specified for all the copy pairs.

Resync Options panel

In the Resync Options panel, you can specify parameters for the YKRESYNC command.

SI Copy Group Resync Options panel

```
                      SI Copy Group Resync Options
Command ===> ____________________________________________________________

Select resynchronization options:
Copy Group ID  : SI

  Direction Option:  Pair Selection:      Copy Pace:       Copy Mode:
  1  1. As-Is        1  1. All            2  1. Slow       1  1. QUICK
     2. Forward         2. Conditional       2. Normal        2. NORMAL
     3. Reverse                              3. Fast

  VolUnit  . . . . . . . . . . . . . . N
  Overwrite ONLINE target volume . . N

 F1=Help    F12=Cancel
```

TC Copy Group Resync Options panel

```
                    TC Copy Group Resync Options
Command ===> ____________________________________________________________

Select resynchronization options:
Copy Group ID  : TC1

  Direction Option:        Pair Selection:          Copy Pace:
  1  1. As-Is              1  1. All                2  1. Slow
     2. Forward               2. Conditional           2. Normal

     3. Reverse

  VolUnit  . . . . . . . . . . . . . . N
  Overwrite ONLINE target volume . . N
  Update Open/MF . . . . . . . . . . N

 F1=Help   F12=Cancel
```

UR Copy Group Resync Options panel displayed from the Manage Copy Groups panel

```
              UR Copy Group Resync Options
Command ===> ____________________________________________

Select resynchronization options:
Copy Group ID  : UR

  Direction Option:        Pair Selection:
  1  1. As-Is              1  1. All
     2. Forward               2. Conditional
     3. Reverse

  Resync Mode:                  Processing Option:
     1. Delta-Journal           1  1. As-Is
     2. All-Journal                2. VolUnit(Linear)
     3. Delta-Recover              3. VolUnit(Dispersed)
     4. Delta-Journal(ERRCHK)
     5. All-Journal(ERRCHK)

  Overwrite ONLINE target volume . . N

 F1=Help   F12=Cancel
```

UR Copy Group Resync Options panel displayed from the Copy Group Pair Status panel

```
              UR Copy Group Resync Options
Command ===> ____________________________________________

Select resynchronization options:
Copy Group ID  : UR

  Direction Option:        Pair Selection:
  1  1. As-Is              1  1. All
     2. Forward               2. Conditional
     3. Reverse

  Error Check Option:
  _  1. Delta-Journal
     2. All-Journal

  VolUnit  . . . . . . . . . . . . . . N
  Overwrite ONLINE target volume . . N

 F1=Help   F12=Cancel
```

The following table lists and describes the items in the Resync Options panel.

Item	Description
Copy Group ID	Copy group ID
Direction Option	Specify the copy direction by using the number. • `AS-IS`: When ShadowImage is used, `AS-IS` performs differential copying of the contents of the P-VOL to the S-VOL. When TrueCopy or Universal Replicator is used, `AS-IS` performs differential copying of the copy pairs that are in the suspend status without changing the currently specified copy direction.

Item	Description
	• Forward: Copies the contents of the P-VOL to the S-VOL. • Reverse: Copies the contents of the S-VOL to the P-VOL.
Pair Selection	Specify the SELECT parameter (indicating how to select the copy pair to be operated) of YKRESYNC command by using the number. • All: Selects all copy pairs as targets. • Conditional: Select target copy pairs based on the volume status of the copy pair.#
Copy Mode	Specify the option for the copy mode by using the number. • QUICK: Changes to DUPLEX status quickly. • NORMAL: Changes to DUPLEX status after the copy finishes. This item can be specified for ShadowImage.
Resync Mode	Specify this when using the Delta Resync function. Specify the DELTAJNL, ALLJNL, PREPARE, or ERRCHK parameter of the YKRESYNC command by using the number. • Delta-Journal: Executes a Delta Resync (the DELTAJNL parameter is specified). • All-Journal: Executes a Delta Resync with full copy (the ALLJNL parameter is specified). • Delta-Recover: Restores the HOLDER status copy pair to HOLD status (the PREPARE parameter is specified). • Delta-Journal(ERRCHK): Identifies the cause of an error during Delta Resync (the DELTAJNL parameter and the ERRCHK parameter are specified). • All-Journal(ERRCHK): Identifies the cause of an error during Delta Resync with full copy (the ALLJNL parameter and the ERRCHK parameter are specified). This item can be specified for Universal Replicator.
Error Check Option	Specify this when using the Delta Resync function. Specify the ERRCHK parameter of the YKRESYNC command by using the number. • Delta-Journal: Identifies the cause of an error during Delta Resync. • All-Journal: Identifies the cause of an error during Delta Resync with full copy. If you do not specify anything, the YKRESYNC command is executed without the ERRCHK parameter. This item can be specified for Universal Replicator.
VolUnit	Specify the VOLUNIT parameter of the YKRESYNC command: • Y: Performs operations on a volume basis, even for an environment that supports operations on a group basis during specification. To specify this parameter after ATTIME suspend, execute the YKSUSPND command with the CANCEL parameter specified.

Item	Description
	• N: Performs operations on a group basis if this is supported by the environment.
Overwrite ONLINE target volume	When the S-VOL is online, specify whether to resynchronize a copy pair (default is N): • Y: Resynchronizes the copy pair even if the S-VOL is online. • N: Does not resynchronize the copy pair if the S-VOL is online.
Update Open/MF	Specify whether the TrueCopy Open/MF Consistency attribute is to be changed (using the Open/MF Consistency Preservation function); the default is N. • Y: Changes the Open/MF Consistency attribute. The value of the Open/MF Consistency attribute of the loaded copy group attribute information is applied. • N: Does not change the Open/MF Consistency attribute. The value of the Open/MF Consistency attribute of the loaded copy group attribute information is not applied.
Processing Option	Specify the units and the order for performing operations on the copy group. Specify the VOLUNIT parameter of the YKRESYNC command by using the number. • As-Is: Resynchronizes in units of individual groups (without specifying the VOLUNIT parameter). • VolUnit(Linear): Resynchronizes in units of individual volumes in the order defined in the copy group definition file (with the VOLUNIT(LINEAR) parameter specified). • VolUnit(Dispersed): Resynchronizes in units of individual volumes so that the journal group to which the volume belongs is dispersed (with the VOLUNIT(DISPERSED) parameter specified). To specify VolUnit(Linear) or VolUnit(Dispersed) after an ATTIME suspension, execute the YKSUSPND command with the CANCEL parameter specified. This item can be specified for Universal Replicator.
Copy Pace	Specify the copy pace when resynchronizing a copy pair (default value is the copy pace value specified when the copy group was defined). • Slow: Slows the speed of the copy operation so that the effect of the copy operation on the I/O performance of the host is minimal. • Normal: The speed of the copy operation improves. However, update I/O load on P-VOL is high, and this might affect the I/O performance of the host. • Fast: Specifying Fast speeds up the copy operation so that it is faster than Normal. However, specifying Fast adversely affects the I/O performance of the host. Because specifying Fast might adversely affect business operations, we recommend that you perform copy pair operations outside of business hours.

#: If **Conditional** is selected and the **Enter** key is pressed, Business Continuity Manager checks whether the immediately preceding copy pair status was acquired. If it was not acquired, that copy pair status is automatically acquired.

The YKRESYNC command terminates successfully when the instruction to the copy pair succeeded. Even if the command has terminated successfully, make sure that the transition of the copy pair status was performed, using the YKQUERY command or the YKEWAIT command. If there is a volume with a status that has not been changed, re-execute the YKRESYNC command with the VOLUNIT parameter specified for all the copy pairs.

Note: Remember the following while performing copy operations:

- If the copy direction of copy groups is changed by using the FORWARD or REVERSE parameter specification, make sure before continuing the operation that you specify q, w, or e in **AC** on the Manage Copy Groups panel and acquire information about the copy direction after the change.
- While copying from a small capacity volume to a large volume in TrueCopy or Universal Replicator, if a failure occurs on the Secondary site, TrueCopy or Universal Replicator cannot be executed in the reverse direction from the Secondary site to the Primary site. This copying function, copying from a small volume to a large volume, should be executed only for data migration purposes. You cannot specify the SVOL(PERMIT) and REVERSE parameters of YKSUSPND command while copying from a small volume to a large volume is in progress in TrueCopy.

Watch Options panel

In the Watch Options panel, you can specify parameters for the YKWATCH command.

```
                        Watch Options
Command ===> ____________________________________________

Options for background Watch job:
Copy Group ID  : SI

  Watch transition to  . . . 1_  1.  Duplex
                                 2.  Suspend
                                 3.  Simplex

  Timeout Hours  . . . . . . 0_____
  Timeout Minutes  . . . . . 30__

  SEND Option  . . . . . . . USER(*)

 F1=Help   F12=Cancel
```

The following table lists and describes the items in the Watch Options panel.

Item	Description
Copy Group ID	Copy group ID

Item	Description
Watch transition to	Specify the waiting status for the `YKWATCH` command by using the number. • `Duplex`: Waits for the volume to change to the `DUPLEX` status • `Suspend`: Waits for the volume to change to the suspend status • `Simplex`: Waits for the volume to change to the `SIMPLEX` status
Timeout Hours#	Specify the value for the `TIMEOUT` parameter (timeout value) in hours (`0` to `999999`).
Timeout Minutes#	Specify the value for the `TIMEOUT` parameter (timeout value) in minutes (`0` to `9999`).
SEND Option	Specify the `USER`, `OPERATOR`, or `CN` parameter of the `YKWATCH` command.

#: The sum total of the values specified in **Timeout Hours** and **Timeout Minutes** is specified for the `TIMEOUT` parameter (timeout value) of the `YKWATCH` command. If the sum total value exceeds 16,666,666 minutes, execution of the command results in an error.

Note: In some configurations, such as when ShadowImage and TrueCopy share volumes or a 1 to *n* (*n* is greater than 2) configuration of ShadowImage, the status transitions of each copy pair might not be correctly monitored.

Wait Options panel

In the Wait Options panel, you can specify parameters for the `YKEWAIT` command.

Wait Options panel (for ShadowImage)

```
                        Wait Options
Command ===> ____________________________________________

Options for Wait:
Copy Group ID  : SI

  Wait transition to . . . . 1  1. Duplex
                                2. Suspend
                                3. Simplex
                                4. SuspVS

  VolUnit  . . . . . . . . . . N

  Timeout Minutes  . . . . . . 5___

  NOINVALIDCHECK . . . . . . . N

 F1=Help   F12=Cancel
```

TC Copy Group Wait Options panel

```
                TC Copy Group Wait Options
Command ===> ____________________________________________

Options for Wait:
Copy Group ID  : TC

  Wait transition to . . . . 1  1. Duplex
                                2. Suspend
                                3. Simplex
                                4. SuspVS
                                5. Swapping to Suspend

  VolUnit  . . . . . . . . . . N

  Timeout Minutes  . . . . . . 5___

  NOINVALIDCHECK . . . . . . . N

 F1=Help   F12=Cancel
```

UR Copy Group Wait Options panel

```
                UR Copy Group Wait Options
Command ===> ____________________________________________

Options for Wait:
Copy Group ID  : UR

  Wait transition to . . . . 1  1. Duplex
                                2. Suspend
                                3. Simplex
                                4. SuspVS
                                5. Hold
                                6. Swapping to Suspend

  VolUnit  . . . . . . . . . . N

  Timeout Minutes  . . . . . . 5___

  NOINVALIDCHECK . . . . . . . N

 F1=Help   F12=Cancel
```

The following table lists and describes the items in the Wait Options panel.

Item	Description
Copy Group ID	Copy group ID
Wait transition to	Specify the waiting status for the `YKEWAIT` command by using the number. • `Duplex`: Waits for the volume to change to the `DUPLEX` status • `Suspend`: Waits for the volume to change to the suspend status • `Simplex`: Waits for the volume to change to the `SIMPLEX` status • `SuspVS`: Waits for the volume to change to the `SUSPVS` status or the suspend status

Item	Description
	• `Hold`: Waits for the volume to change to the `HOLD` status. This is displayed only when the copy type is `UR`. • `Swapping to Suspend`: Waits for the volume to change from the `SWAPPING` status to the suspend status (`SUSPOP`, `SUSPER`, or `SUSPCU`)
VolUnit	Specify whether to specify the `VOLUNIT` parameter. • `Y`: The `VOLUNIT` parameter is specified. Information is obtained on a volume basis. • `N`: The `VOLUNIT` parameter is not specified. Information is normally obtained on a control unit basis.
Timeout Minutes	Specify the value for the `TIMEOUT` parameter (timeout value) in minutes (`0` to `9999`).
NOINVALIDCHECK	Specify whether to specify the `NOINVALIDCHECK` parameter. • `Y`: The `NOINVALIDCHECK` parameter is specified. The detection of invalid statuses is disabled. • `N`: The `NOINVALIDCHECK` parameter is not specified. The detection of invalid statuses is enabled.

Panel transitions from the Copy Group Fence Status Summary panel

The following figure shows the panel transitions from the Copy Group Fence Status Summary panel.

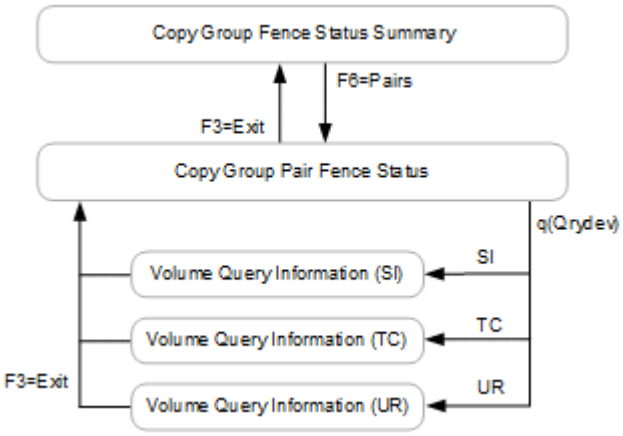


Figure 1-12 Panel transitions from the Copy Group Fence Status Summary panel

Copy Group Fence Status Summary panel

The Copy Group Fence Status Summary panel displays the number of volumes in a copy group for each fence status.

```
                        Copy Group Fence Status Summary
Command ===> ____________________________________________________________
                                                        2017/01/17 12:02:23
                      Copy Group ID: UR
                        Description:
        Primary Device Addr. Domain: SF
      Secondary Device Addr. Domain: LA

                      Current Time: 20170117 12:02:23

                             Fence Status Counts
             ----- Primary ------          ---- Secondary -----
                Soft Fence:     5             Soft Fence:     0
                SPID Fence:     5             SPID Fence:     0
                      Both:    10                   Both:     0
                   Unfence:    10                Unfence:     0
                       N/A:     0                    N/A:    30
             Total volumes:    30          Total volumes:    30


 F1=Help   F3=Exit   F6=Pairs
```

The following table lists and describes the items in the Copy Group Fence Status Summary panel.

Item		Description
Copy Group ID		Copy group ID
Description		Description of the copy group
Primary Device Addr. Domain		Primary device address domain ID
Secondary Device Addr. Domain		Secondary device address domain ID
Current Time		Current time
Fence Status Counts - Primary	Soft Fence	Number of P-VOLs in which soft fence is set only
	SPID Fence	Number of P-VOLs in which SPID fence is set only
	Both	Number of P-VOLs in which both soft fence and SPID fence are set
	Unfence	Number of P-VOLs in which neither of soft fence nor SPID fence is set
	N/A	Number of P-VOLs that was not able to acquire the fence status#
	Total volumes	Total number of P-VOLs
Fence Status Counts - Secondary	Soft Fence	Number of S-VOLs in which soft fence is set only
	SPID Fence	Number of S-VOLs in which SPID fence is set only
	Both	Number of S-VOLs in which both soft fence and SPID fence are set
	Unfence	Number of S-VOLs in which neither of soft fence nor SPID fence is set
	N/A	Number of S-VOLs that was not able to acquire the fence status#

Item		Description
	Total volumes	Total number of S-VOLs

#: Includes Non Gen'ed volume and the volumes of the remote storage system.

Copy Group Pair Fence Status panel

The Copy Group Pair Fence Status panel displays the fence status of a volume for each copy pair.

```
                        Copy Group Pair Fence Status             Row 1 to 4 of 4
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                            2017/01/17 01:10:17
Supported actions: q(Qrydev)

Copy Group ID . . : UR
Primary SCHSET : 0  Secondary SCHSET : 0
------------------------------------------------------------------------------
    Pri             Sec             AC Result
AC  Devn State      Devn State      Action   RC
_   0F00 BOTH       1100 N/A
_   0F01 SPIDFENCE  1101 N/A
_   0F03 SOFTFENCE  1103 N/A
_   0F04 UNFENCE    1104 N/A
******************************** Bottom of data ********************************
 F1=Help      F3=Exit      F6=Sort      F7=Backward  F8=Forward
```

The following table lists and describes the items in the Copy Group Pair Fence Status panel.

Item		Description
Copy Group ID		Copy group ID
Primary SCHSET		Primary subchannel set ID
Secondary SCHSET		Secondary subchannel set ID
AC		Specify an action. The following commands can be executed for individual copy pairs: • `q`: Executes the `YKQRYDEV` command to display the copy pair volume status. The Volume Query Information panel is displayed.
Pri	Devn	Device number of the P-VOL
	State	Fence status of the P-VOL • `SOFTFENCE`: Only soft fence is set • `SPIDFENCE`: Only SPID fence is set • `BOTH`: Both the soft fence and SPID fence are set • `UNFENCE`: Neither the soft fence nor SPID fence is set • `N/A`: Could not acquire the fence status#

Item		Description
Sec	Devn	Device number of the S-VOL
	State	Fence status of the S-VOL • SOFTFENCE: Only soft fence is set • SPIDFENCE: Only SPID fence is set • BOTH: Both the soft fence and SPID fence are set • UNFENCE: Neither the soft fence nor SPID fence is set • N/A: Could not acquire the fence status#
AC Result	Action	Executed action
	RC	Execution result for the executed action (*nnn*)

#: Includes Non Gen'ed volume and the volumes of the remote storage system.

If you press the **F6=Sort** key, the Sort Copy Group Pair Fence Status panel is displayed to specify the order for displaying the copy pairs. For details about the Sort Copy Group Pair Fence Status panel, see Sort Copy Group Pair Fence Status panel on page 1-168.

You can use the LOCATE and SORT commands in the Copy Group Pair Fence Status panel. For details about how to use each command, see Commands that can be used in the ISPF panels on page 1-4.

You can specify the following fields for the sort key of the SORT command:

Name of field	Sorted by	Direction
PSTATE	Fence status of the P-VOL	Ascending
SSTATE	Fence status of the S-VOL	Ascending

Sort Copy Group Pair Fence Status panel

In the Sort Copy Group Pair Fence Status panel, you can specify a soft key for displaying copy pairs.

```
    Sort Copy Group Pair Fence Status
Option ===> ______________________________

Select the desired sort sequence:
Choose one
1  Primary State
2  Secondary State

 F1=Help   F12=Cancel
```

In the Sort Copy Group Pair Fence Status panel, you can select the sorting order from the following items.

Item	Sorted by
1 Primary State	Fence status of the P-VOL
2 Secondary State	Fence status of the S-VOL

Copy Group Soft Unfence Options panel

In the Copy Group Soft Unfence Options panel, you can specify a volume for resetting the soft fence by using the `YKFENCE` command.

```
              Copy Group Soft Unfence Options
Command ===> ____________________________________________

Select site for soft unfence options:
Copy Group ID  : GRP1UR

  Site selection:
  1  1. Primary
     2. Secondary

 F1=Help   F12=Cancel
```

The following table lists and describes the items in the Copy Group Soft Unfence Options panel.

Item	Description
Copy Group ID	Copy group ID
Site selection	Specify a volume for resetting the soft fence by using the `YKFENCE` command. • `Primary`: Resets the soft fence of the P-VOL of the copy pair. • `Secondary`: Resets the soft fence of the S-VOL of the copy pair.

Path Set Status of Copy Group Pair panel

The Path Set Status of Copy Group Pair panel displays the status of logical paths.

```
                      Path Set Status of Copy Group Pair       Row 1 to 1 of 1
Command ===> ________________________________________________ Scroll ===> PAGE

                                                          2008/03/11 20:34:04
Supported action: s(Show detail)

Copy Group ID  . . : UR

        --- Primary ----     -- Secondary ---
AC Type SN    ID CU SSID Dir SN    ID CU SSID Status
_  DKC  14002 00         ->  64050            ESTABLISHED 1/1 PORT(S)
****************************** Bottom of data ******************************

 F1=Help      F3=Exit      F4=Refresh   F6=Sort      F7=Backward  F8=Forward
F12=Cancel
```

The following table lists and describes the items in the Path Set Status of Copy Group Pair panel.

Item		Description
Copy Group ID		Copy group ID
AC		Specify an action. • `s`: Displays the status of physical paths in logical paths. The Logical Path Status of Copy Group Pair panel appears.
Type		Path type • `CU`: Inter-control unit logical path • `DKC`: Inter-disk controller logical path
Primary	**SN**	Serial number of the primary storage system
	ID	Primary path group ID (path group ID in the forward direction) When the path type is `CU`, nothing is displayed.
	CU	Primary control unit number
	SSID	Primary SSID
Dir		Path direction
Secondary	**SN**	Serial number of the secondary storage system
	ID	Secondary path group ID (path group ID in the reverse direction) When the path type is `CU`, nothing is displayed.
	CU	Secondary control unit number
	SSID	Secondary SSID
Status		Status of the logical path used by the copy pair • `ESTABLISHED` *n*/*n* `PORT(S)`: All defined physical paths have been established (where *n* indicates the number of defined physical paths). • `ESTABLISHED` *m*/*n* `PORT(S)`: Among all of the physical paths defined by the hardware, only those established are displayed (where *m* indicates the number of physical paths in the `ESTABLISHED` status, and *n* indicates the number of defined physical paths). • `INVALID`: An error has occurred on a physical path.

The path information displayed in the Path Set Status of Copy Group Pair panel differs depending on the copy type.

- When the copy type is TrueCopy, path information for the inter-control unit logical path in the copy direction is displayed.
- When the copy type is Universal Replicator, path information for the bidirectional inter-disk controller logical path or path information for all paths for which a path group ID is specified is displayed.
- When the copy type is ShadowImage, no path information is displayed.

If you press the **F6=Sort** key, the Sort Logical Paths in the Path Set panel appears. In this panel, you can specify the order for displaying logical paths. For details about the Sort Logical Paths in the Path Set panel, see Sort Logical Paths in the Path Set panel on page 1-64.

In the Path Set Status of Copy Group Pair panel, you can use the `SORT` command. For details about how to use the `SORT` command, see Commands that can be used in the ISPF panels on page 1-4.

Logical Path Status of Copy Group Pair panel

The Logical Path Status of Copy Group Pair panel displays the physical paths within the logical paths used by a copy pair.

```
                    Logical Path Status of Copy Group Pair     Row 1 to 1 of 1
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                          2008/03/11 20:33:19

Copy Group ID  . . : UR
Type . . . . . . . : DKC
            S/N      PathID  CU  SSID
Primary . : 14002    00
Secondary : 64050

Primary  Dir  Secondary  Status
44       ->   21         ESTABLISHED
****************************** Bottom of data ******************************

 F1=Help      F3=Exit      F7=Backward  F8=Forward  F12=Cancel
```

The following table lists and describes the items in the Logical Path Status of Copy Group Pair panel.

Item		Description
Copy Group ID		Copy group ID
Type		Path type • `CU`: Inter-control unit logical path • `DKC`: Inter-disk controller logical path
Primary	**S/N**	Serial number of the primary storage system
	PathID	Primary path group ID (path group ID in the forward direction) When the path type is `CU`, nothing is displayed.
	CU	Primary control unit number
	SSID	Primary SSID
Secondary	**S/N**	Serial number of the secondary storage system
	PathID	Secondary path group ID (path group ID in the reverse direction) When the path type is `CU`, nothing is displayed.
	CU	Secondary control unit number

Item		Description
	SSID	Secondary SSID
Primary		Primary port number
Dir		Path direction
Secondary		Secondary port number
Status		Status of each physical path • `ESTABLISHED`: The physical path has been established. • `INIT FAILED`: Initialization failed. • `TIME OUT`: A timeout occurred. • `NO RESOURCES AT PRI`: The port for the primary storage system is invalid. • `NO RESOURCES AT SEC`: The port for the secondary storage system is invalid. • `SERIAL# MISMATCH`: The storage system serial numbers do not match. • `CONFIG ERROR`: The interface ID is invalid.

EXCTG Information panel

The EXCTG Information panel displays information about EXCTG.

```
                              EXCTG Information
Command ===> ____________________________________________________
                                                   2012/02/29 15:55:09
Copy Group ID  . . . . . . . . . . : UR4X4
Description  . . . . . . . . . . . : UR 4X4 CONFIGURATION
EXCTG Consistency Time (GMT) . . . : 20120229 06:55:07.123456
EXCTG Consistency Time (LOCAL) . . : 20120229 15:55:07.123456
EXCTG CTDelta  . . . . . . . . . . : 000 00:00:02




 F1=Help      F3=Exit      F4=Refresh
```

The following items are displayed in the EXCTG Information panel.

Item	Description
Copy Group ID	Copy group ID
Description	Copy group description
EXCTG Consistency Time (GMT)	EXCTG consistency time (in GMT) acquired from the supervisor disk controller. If the EXCTG consistency time cannot be acquired, `N/A` is displayed.
EXCTG Consistency Time (LOCAL)	EXCTG consistency time (in local time) acquired from the supervisor disk controller.

Item	Description
	If the EXCTG consistency time cannot be acquired, `N/A` is displayed.
EXCTG CTDelta	Difference between the time at which EXCTG information was acquired and the EXCTG consistency time. If the EXCTG consistency time cannot be acquired, `N/A` is displayed.

2

CLI commands

This chapter describes the functions of the commands available in the command line interface for Business Continuity Manager.

Copy types and targets for which commands can be executed

This section explains the copy types and targets for which commands can be executed.

Each command has certain copy types and targets that it can execute. The copy types and targets for which commands can be executed are indicated by the following phrases after the command name:

- ShadowImage: When the copy type is ShadowImage, the command is executable.
- TrueCopy: When the copy type is TrueCopy (without the HyperSwap attribute), the command is executable.
- TrueCopy with the HyperSwap attribute: When the copy type is TrueCopy with the HyperSwap attribute, the command is executable.
- Universal Replicator: When the copy type is Universal Replicator, the command is executable.
- CMD: The command is for operating command devices.
- PTH: The command is for operating logical paths.

The (SI) ShadowImage, (TC) TrueCopy, TrueCopy with the HyperSwap attribute, and (UR) Universal Replicator abbreviations following a parameter name indicate the copy types for which that parameter is effective, independent of the copy type for which the command executes. Commands without ShadowImage, TrueCopy, TrueCopy with the HyperSwap attribute, or Universal Replicator abbreviations listed after them can be executed on any copy type.

If any one of the parameters in a command is not specified with the correct syntax, the parameter might be handled as a parameter that is similar to the incorrect specification. To prevent incorrect operation, make sure that you use the correct syntax when specifying parameters.

List of functions

The following table shows the correspondence between the functions supported by Business Continuity Manager and its commands. Commands are listed in alphabetical order.

Some CLI commands initialize the REXX variable structure. For information about the REXX variable structure, see REXX variable structures on page 3-24.

Table 2-1 List of supported functions

Command	Function
`YKBLDCMD`	Registers the specified command device in the storage system.

Command	Function
YKBLDPTH	Establishes all or some of the inter-disk controller or inter-control unit logical paths included in the path set information loaded by the YKLOAD command.
YKBLDRMT#4	Registers, in the storage system, all command devices defined in routes that originate from the execution host in the specified route list.
YKCONMSG	Monitors copy status display messages that are output to the MVS™ console.
YKDEFGRP#4	Generates a copy group definition file with no copy pair definitions, and sets the optional copy group attributes according to the input parameters.
YKDEFRMT#4	Generates a route list definition file and a definition file for command devices in the route according to the input parameters.
YKDELCMD	Deletes the specified command device from the storage system.
YKDELCNF#4	Deletes the configuration file specified in the input parameters.
YKDELETE	Dissolves a copy pair from a P-VOL and changes the volume status to the SIMPLEX status.
YKDELPTH	Deletes all or some of the inter-disk controller or inter-control unit logical paths included in the path set information loaded by the YKLOAD command.
YKDELRMT#4	Deletes, from the storage system, all command devices defined in routes that originate from the execution host in the specified route list.
YKDEXCTG	Dissolves a journal group from an EXCTG.
YKDROP#3	Drops a REXX variable structure that has been loaded from a script by using the YKLOAD command and then expanded.
YKDSPGRP#4	Outputs the definitions of the specified copy group.
YKDSPRMT#4	Outputs the specified route list and the definitions of the command devices that are referenced in the route list.
YKENV	Obtains a Business Continuity Manager environment variable and displays it in the TSO/E terminal.
YKERCODE	Displays storage system sense byte information (error codes) on the TSO/E terminal.
YKEWAIT	Monitors the copy pair status transition and waits for a certain specified status.
YKEXPORT#5	Outputs the contents of a copy group definition file to a CSV file.
YKFCSTAT	Acquires the FlashCopy® information of the specified volume.
YKFENCE	Sets the soft fence for, or resets the soft fence of, a volume in the specified copy group. In addition, this command acquires the soft fence status and the SPID fence status.
YKFREEZE	Freezes the specified copy group, changes it to the SCP status, and then suspends update I/O for the P-VOL.
YKGETHDA#1	Reads values from the disk configuration definition file and converts the information to REXX variables that are valid on the target host.
YKH2B#5	Scans the active PPRC copy pairs and automatically generates a copy group definition file for a TrueCopy copy group with the HyperSwap attribute.
YKIMPORT#5	Reads a CSV file and creates a copy group definition file.

Command	Function
YKINSCHK	Checks to verify that all installation and setup tasks have been completed.
YKLISTID#4	Searches for configuration files that match the conditions specified in the input parameters.
YKLOAD#1	Reads values from the configuration file defined in the ISPF panel and converts them to REXX variables that are valid on the target host.
YKMAKE	Makes a copy pair by full copy and changes the volume status to the DUPLEX status.
YKQEXCTG	Acquires EXCTG information from the supervisor disk controller.
YKQHPATH	Displays the I/O path status between the host and the storage system.
YKQRYDEV	Displays and outputs information about the specified volume.
YKQRYPTH	Acquires the status of the physical paths allocated to all or some of the inter-disk controller or inter-control unit logical paths included in the path set information loaded by the YKLOAD command.
YKQUERY	Displays and outputs copy pair information.
YKRECVER	Dissolves a copy pair from an S-VOL and changes the volume status to the SIMPLEX status.
YKRESYNC	Resynchronizes a copy pair by differential copy and changes the volume status to the DUPLEX status.
YKRUN	Cancels the SCP status for the specified copy group and makes the update I/O for P-VOL enabled.
YKSCAN	Scans the entire range of device numbers and generates the REXX variables for all volumes found.
YKSLEEP	Temporarily stops script execution for a specified time.
YKSTATS	Acquires the operating information for the specified copy group.
YKSTORE#1, #5	Converts the REXX variables that are valid on the target host and writes the converted values to the configuration file defined in the ISPF panel.
YKSUSPND	Suspends a copy pair and changes the volume status to the SUSPOP status.
YKTIME	Converts the time zone of date and time strings, to and from the GMT and local time zones.
YKVFCGCT#2	Verifies the consistency between the copy group definitions that compose the Cascade, Multi-Target, and Delta Resync configurations.
YKWATCH#2	Monitors the copy pair status transition and waits for a previously specified status.
YKWTOMSG#3	Outputs the specified message to a console.
YKWTOR#3	Outputs the specified message to a console, and then waits for a response from an operator. The command also sets a response message that is input to the console for the REXX variable.

#1

REXX subroutine

#2

REXX script

#3

REXX function

#4

REXX exec

#5

Operations in System REXX environment are not supported.

Configuration files that must be loaded before command execution

This section describes the configuration files that must be loaded for the execution of a command.

The table below lists the configuration files that must be loaded in an environment that does not contain Non Gen'ed volumes and for which the following conditions apply:

- The P-VOL is recognized by the host.
- The copy type is TrueCopy or Universal Replicator, and the host does not recognize the S-VOL.
- The copy type is ShadowImage, and the host recognizes the S-VOL.

Commands for which the route list definition file must be loaded before command execution can be issued to Gen'ed volumes via a command device.

Table 2-2 Configuration files that must be loaded before command execution (when the environment does not contain a Non Gen'ed Volume)

Command name	Configuration file that must be loaded		
	Copy group definition file	Route list definition file	Path set definition file
YKBLDCMD	--	Y	--
YKBLDPTH	--	D#1	Y
YKBLDRMT	--	--	--
YKCONMSG	--	--	--
YKDEFGRP	--	--	--
YKDEFRMT	--	--	--
YKDELCMD	--	Y	--
YKDELCNF	--	--	--
YKDELETE	Y	D#2, #6	--
YKDELPTH	--	D#1	Y

Command name	Configuration file that must be loaded		
	Copy group definition file	Route list definition file	Path set definition file
YKDELRMT	--	--	--
YKDEXCTG	Y	Y	--
YKDROP	--	--	--
YKDSPGRP	--	--	--
YKDSPRMT	--	--	--
YKENV	--	--	--
YKERCODE	--	--	--
YKEWAIT	Y	D#2, #3, #4	--
YKEXPORT	--	--	--
YKFCSTAT	--	--	--
YKFENCE	Y	--	--
YKFREEZE	Y	Y	--
YKGETHDA	--	--	--
YKH2B	--	--	--
YKIMPORT	--	--	--
YKINSCHK	--	--	--
YKLISTID	--	--	--
YKMAKE	Y	D#2, #4	--
YKQEXCTG	Y	Y	--
YKQHPATH	--	--	--
YKQRYDEV	--	D#3, #7	--
YKQRYPTH	--	D#1	Y
YKQUERY	Y	D#3, #4	--
YKRECVER	Y	Y	--
YKRESYNC	Y	D#2, #5, #6	--
YKRUN	Y	Y	--
YKSCAN	--	--	--
YKSLEEP	--	--	--
YKSTATS	Y	D#3	--
YKSUSPND	Y	D#2, #5, #8	--
YKTIME	--	--	--

Command name	Configuration file that must be loaded		
	Copy group definition file	Route list definition file	Path set definition file
YKVFCGCT	--	--	--
YKWATCH	--	--	--
YKWTOMSG	--	--	--
YKWTOR	--	--	--

Legend:

Y: You need to load the configuration file.

D: Whether you need to load the configuration file depends on the situation.

--: You do not need to load the configuration file.

#1

You need to load the configuration file when operating a reverse-direction path.

#2

When using the TrueCopy consistency preservation function (when operating a TrueCopy copy group with a consistency group ID specified), you do not need to load the configuration file before executing the YKMAKE command. However, you need to load the configuration file before executing other copy group operation commands.

#3

You need to load the configuration file when acquiring information about an S-VOL that is not recognized by the host.

#4

You need to load the configuration file when you operate a copy group container with EXCTG ID.

#5

You need to load the configuration file when the copy type is TrueCopy or Universal Replicator, and when you specify the REVERSE parameter.

#6

Even if you specify for the commands to be issued via a command device, the commands might be issued directly to the volumes on which the operation is to be performed.

#7

When you specify the DEVN parameter, even if you specify for the commands to be issued via a command device, the commands are issued directly to the volumes on which the operation is to be performed.

#8

When you specify the ATTIME or CANCEL parameter, even if you specify for the commands to be issued via a command device, the commands are issued directly to the volumes on which the operation is to be performed.

The table below lists the configuration files which must be loaded in an environment which contains Non Gen'ed volumes and for which the following conditions apply:

- The copy type is TrueCopy or Universal Replicator, and the host does not recognize the P-VOL (remote storage system) and S-VOL (Non Gen'ed volume).
- The copy type is ShadowImage, and the host does not recognize the P-VOL (Non Gen'ed volume), but recognizes the S-VOL.
- The copy type is ShadowImage, and the host recognizes the P-VOL, but does not recognize the S-VOL (Non Gen'ed volume).

Table 2-3 Configuration files that must be loaded before command execution (when the environment contains a Non Gen'ed Volume)

Command name	Configuration file that must be loaded		
	Copy group definition file	Route list definition file	Path set definition file
YKBLDCMD	--	Y	--
YKBLDPTH	--	D#1	Y
YKBLDRMT	--	--	--
YKCONMSG	--	--	--
YKDEFGRP	--	--	--
YKDEFRMT	--	--	--
YKDELCMD	--	Y	--
YKDELCNF	--	--	--
YKDELETE	Y	D#2	--
YKDELPTH	--	D#1	Y
YKDELRMT	--	--	--
YKDEXCTG	Y	Y	--
YKDROP	--	--	--
YKDSPGRP	--	--	--
YKDSPRMT	--	--	--
YKENV	--	--	--
YKERCODE	--	--	--
YKEWAIT	Y	D#2	--
YKEXPORT	--	--	--

Command name	Configuration file that must be loaded		
	Copy group definition file	Route list definition file	Path set definition file
YKFCSTAT	--	--	--
YKFENCE	Y	--	--
YKFREEZE	Y	--	--
YKGETHDA	--	--	--
YKH2B	--	--	--
YKIMPORT	--	--	--
YKINSCHK	--	--	--
YKLISTID	--	--	--
YKMAKE	Y	D#2	--
YKQEXCTG	Y	Y	--
YKQHPATH	--	--	--
YKQRYDEV	--	Y	--
YKQRYPTH	--	D#1	Y
YKQUERY	Y	D#2	--
YKRECVER	Y	Y	--
YKRESYNC	Y	D#2	--
YKRUN	Y	--	--
YKSCAN	--	--	--
YKSLEEP	--	--	--
YKSTATS	Y	D#2	--
YKSUSPND	Y	D#2	--
YKTIME	--	--	--
YKVFCGCT	--	--	--
YKWATCH	--	--	--
YKWTOMSG	--	--	--
YKWTOR	--	--	--

Legend:

Y: You need to load the configuration file.

D: Whether you need to load the configuration file depends on the situation.

--: You do not need to load the configuration file.

#1

You need to load the configuration file when operating a forward-direction path (a path from a P-VOL whose copy type is TrueCopy or Universal Replicator to an S-VOL). You also need to load the configuration file if all of the volumes in the control unit are Non Gen'ed volumes when operating an inter-control unit logical path.

#2

You need to load the configuration file when the copy type is TrueCopy or Universal Replicator.

How to execute CLI commands that require input parameters

This section provides details on the CLI commands for which input parameter datasets must be allocated before execution.

The following CLI commands require input parameters.

- YKBLDRMT
- YKDEFGRP
- YKDEFRMT
- YKDELCNF
- YKDELRMT
- YKDSPGRP
- YKDSPRMT
- YKLISTID

Input parameter datasets

This section describes the input parameter datasets.

DD name

Define the input parameters in one of the following datasets.

Input parameter dataset	Content to be specified in the record	DD name
CLI parameter dataset	Parameters specific to the CLI command	Value specified for the `DD` operand of the CLI parameter (default value: `CLIPARMS`)
Default parameter dataset	Default values for the parameters common to all CLI commands	`CLIDFLTS`

In the CLI parameter dataset, specify the parameters specific to the CLI command.

In the default parameter dataset, specify the default values of the parameters common to all CLI commands, as you did on the ISPF Set Defaults panel.

You can specify a parameter in both the datasets, but if the same parameter is defined in both the CLI parameter dataset and the default parameter dataset, the definition in the CLI command parameter dataset will take effect. The parameters required by a CLI command only need to be specified in one of the datasets. Therefore, if the parameters are specified in the default parameter dataset, they can be omitted even if they are required parameters.

Allocate the input parameter datasets to the specified DD name before executing a CLI command. You can assign any dataset names to the input parameter datasets. You can change the DD name of the CLI parameter dataset by using the DD operand of the CLI parameter.

Dataset format

Allocate the CLI parameter dataset and the default parameter dataset by using the following attributes.

DSORG	Member of a sequential (PS) or partitioned (PDS/PDSE) data set
RECFM	F|FB|V|VB
LRECL	255 or less

Record format

Specify the input parameter record in one of the following formats.

```
parameter-name Δ1parameter-value-or-operand
Δ1parameter-value-or-operand (continuation of the previous record)
#annotation
```

- Specify the parameter name starting from the beginning of the record.
- If the first character of a record is blank, the record will be considered a continuation of the previous record, and will be concatenated with the previous record. (If the previous record is an annotation record, the record will be concatenated with the closest preceding record that is not an annotation record.)
- If the first character of a record is a hash mark (#), the record will be considered an annotation record and will be skipped.
- If the last eight characters of a record are all numbers, those eight characters are considered the line number.
- If the first eight characters of a record are all numbers, those eight characters are considered the line number.

Default parameters

This section describes the default parameter dataset.

Format

PREFIX△1*dataset-prefix-for-the-configuration-file*

DAD△1*DADID-of-the-host-on-which-BC-Manager-is-running*

[ROUTEID△1*route-list-ID*]

[ROUTELABEL△1*route-label*]

[STORCLAS△1*storage-class-name*]

[VOLUME△1*volume-serial-number*]

[UNIT△1*device-type*]

[CFGUPDTE△1{INPLACE|REALLOC}]

Function

These are the default values for the parameters common to all CLI commands to be specified in the default parameter dataset.

If you specify a default parameter in the default parameter dataset, you can omit that parameter in the CLI parameter dataset (regardless of whether the parameter is required).

If the same parameter is defined in both the CLI parameter dataset and the default parameter dataset, the definition in the CLI parameter dataset will take effect.

Parameters

PREFIX *dataset-prefix-for-the-configuration-file* ~ <PREFIX string> ((1 to 16 characters))

Specify the prefix of the configuration file name.

DAD *DADID-of-the-host-on-which-BC-Manager-is-running* ~ <DAD string> ((1 to 28 characters or 44 - (13 + PREFIX length), whichever is smaller))

Specify the device address domain ID of the storage system specified on the current host (host DADID).

ROUTEID *route-list-ID* ~ <ROUTE string> ((1 to 8 characters))

Specify the route list ID to be specified in the ROUTE parameter of the YKLOAD command.

ROUTELABEL *route-label* ~ <ROUTELABEL string> ((1 to 8 characters))

Specify the route label to be specified in the ROUTE parameter of the YKLOAD command.

STORCLAS *storage-class* ~ <storage class string>

Specify the storage class to which you want to assign the configuration file.

`VOLUME` *volume-serial-number* ~ <volume serial number string> ((1 to 6 characters))

Specify the volume to which you want to assign the configuration file.

`UNIT` *device-type* ~ <device type string> ((1 to 8 characters))

Specify the device type to which you want to assign the configuration file.

`CFGUPDTE {INPLACE|REALLOC}`

Specify the method for saving the configuration file. The default value is `INPLACE`.

`INPLACE`

Directly updates the configuration file without creating a temporary file.

`REALLOC`

Creates a temporary file when creating or updating definitions, and then creates or updates the configuration file.

How to call a command

This section describes how to call a CLI command.

How to call a command by using a REXX script

Allocate the input parameter dataset to a DD name in advance.

Execute the `EXEC TSO` command in Address TSO to call the CLI.

Example of calling a command

```
Address TSO “ALLOC DD(CLIPARMS ) DS(DSNAME)”
Address TSO “ALLOC DD(CLIDFLTS) DS(DSNAME)”
Address TSO “EXEC %YK****** 'DD(CLIPARMS)’  EXEC”
```

How to call a command by using a TSO terminal

Allocate the parameter file and the default parameter file to DD names in advance.

Use the `EXEC TSO` command to call the CLI.

Example of calling a command

```
ALLOC DD(CLIPARMS ) DS(DSNAME)
ALLOC DD(CLIDFLTS) DS(DSNAME)
EXEC %YK****** 'DD(CLIPARMS)’ EXEC
```

How to call a command by using JCL

Perform the operation in the batch TSO environment. Specify the input parameters for the CLI command in the dataset allocated to the DD name specified in the DD operand. The execution results are output to `SYSTSPRT`.

```
//STEP     EXEC PGM=IKJEFT01,TIME=1440,REGION=4096K,
//             PARM='%YKDSPGRP DD(CLIPARMS)'
//STEPLIB  DD DSN=HDSYK.Vnnnnnn.HDSYLNKT,DISP=SHR       linklib
//SYSEXEC  DD DSN=HDSYK.Vnnnnnn.HDSYEXET,DISP=SHR       execlib
//SYSTSPRT DD SYSOUT=*
//SYSTSIN  DD DUMMY
//SYSABEND DD SYSOUT=*
//CLIDFLTS DD DSN=PREFIX.DEFAULT.PARM,DISP=SHR
//CLIPARMS DD *
#parameter records
GROUP CGID
/*
```

Command details

This section describes command details. For details about the syntax symbols used in the explanations, see Appendix B, Method for assigning dummy device numbers by using YKBTSCAN on page B-1.

YKBLDCMD command

Applies to CMD.

Format

YKBLDCMD

{△1SN(*storage-system-serial-number*)|

△1SN(*storage-system-serial-number*)△1CU(*CU-number*)△1CCA(*CCA-number*)

△1APID(*APID*)|

△1DEVN(*device-number*)△1APID(*APID*)}

△1MSG(*stem-name-1*)

Function

This command is a TSO/E command called from REXX scripts.

The command registers, into the storage system, the command device that was specified in the route list that was loaded before this command was executed.

Parameters

SN(*storage-system-serial-number*) ~ <from 5 to 12 alphanumeric characters>

When you register the command devices for a storage system in the route list, specify the storage system serial number.

SN(*storage-system-serial-number*) CU(*CU-number*) CCA(*CCA-number*) APID(*APID*)

When you specify and register a command device in the route list, specify the serial number of the storage system, CU number, CCA number, and APID for the command device.

SN(*storage-system-serial-number*) ~ <from 5 to 12 alphanumeric characters>

Specify the storage system serial number.

CU(*CU-number*) ~ <two-digit hexadecimal number>

Specify the CU number.

CCA(*CCA-number*) ~ <two-digit hexadecimal number>

Specify the CCA number.

APID(*APID*) ~ <four-digit hexadecimal number>

Specify the APID.

DEVN(*device-number*) APID(*APID*)

When you specify and register a command device, specify the device number and the APID of the command device.

Only when you specify this parameter do you not have to load the route list. The DEVN parameter cannot be specified for remotely connected storage systems.

DEVN(*device-number*) ~ <4- or 5-digit hexadecimal number>((00000-3FFFF))

Specify the device number.

When multiple subchannel sets are used, specify this parameter as a 5-digit number by adding the 1-digit subchannel set ID before the device number. If the subchannel set ID is omitted, 0 is assumed.

APID(*APID*) ~ <4-digit hexadecimal number>

Specify the APID.

MSG(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the MSG parameter is called.

Notes

- Execute the YKBLDCMD command only once after turning on the storage system. Even if this command is entered multiple times, only the first time is effective, and entry after the first time does not take effect. However, before this command is entered, make sure that storage system control with the corresponding command device did not take place.
- For the YKBLDCMD command, you need to input the storage system for the Primary site and Secondary site, according to the site order defined in the route list. Enter for the Primary site first, and then for the Secondary site.
- If multiple command devices have been defined for a storage system, when you register the command devices for the storage system, processing continues even if an error occurs for one or more of the command devices.
- Do not delete paths (inter-control unit logical paths or inter-disk controller logical paths) among storage systems when a command device is registered.
- The corresponding command device should be offline before the YKBLDCMD command is executed.

Return codes

The following table lists and describes the return codes of the YKBLDCMD command.

Table 2-4 YKBLDCMD command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
32	• I/O error(s) were encountered. • A change to an I/O configuration definition was detected.
40	An error occurred while a REXX variable was being written.
44	Termination due to processing errors.
48	Termination due to invalid parameters.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKBLDPTH command

Applies to PTH.

Format

```
YKBLDPTH
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
[Δ1PSN(storage-system-serial-number)[Δ1PCU(cu-number)]]
[Δ1SSN(storage-system-serial-number)[Δ1SCU(cu-number)]]
[Δ1PTID(path-group-ID)]
[Δ1{FORWARD|REVERSE}]
[Δ1TYPE({CU|DKC})]
```

Function

This command is a TSO/E command called from REXX scripts.

This command establishes logical paths for some or all of the paths identified in the path set that is stored in the path set structure with the prefix specified by the `STEM` parameter.

Parameters

`STEM(`*stem-name-1*`)` ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the path set structure that stores information about the logical path to be established. Specify the same character string as the one specified in the `STEM` parameter of the `YKLOAD` command that loaded the corresponding logical path. The last character must be a period (`.`).

`MSG(`*stem-name-2*`)` ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (`.`).

The message structure is initialized when the CLI command with the same name as the `MSG` parameter is called.

`PSN(`*storage-system-serial-number*`)` ~ <from 5 to 12 alphanumeric characters>

If this parameter is specified, for each logical path within the path set stored in the path set structure specified for the `STEM` parameter, inter-control unit logical paths will be established that treat control units within storage systems (that have the serial number specified by this parameter) as main

control units, and inter-disk controller logical paths will be established that treat the storage system (that has the serial number specified by this parameter) as the primary storage system.

If neither this parameter nor any other parameters are specified, the command establishes all logical paths.

PCU (*cu-number*) ~ <2-digit hexadecimal number>

If this parameter is specified, for each logical path within the path set stored in the path set structure specified for the STEM parameter, inter-control unit logical paths will be established, for each of which the control unit number of the main control unit matches the value specified for this parameter. Inter-disk controller logical paths are not affected by this parameter.

If neither this parameter nor any other parameters are specified, the command establishes all inter-control unit logical paths.

SSN (*storage-system-serial-number*) ~ <from 5 to 12 alphanumeric characters>

If this parameter is specified, for each logical path within the path set stored in the path set structure specified for the STEM parameter, inter-control unit logical paths will be established such that the paths treat control units within storage systems (that have the serial number specified by this parameter) as remote control units, and inter-disk controller logical paths will be established such that the paths treat the storage system (that has the serial number specified by this parameter) as the secondary storage system.

If neither this parameter nor any other parameters are specified, the command establishes all logical paths.

SCU (*cu-number*) ~ <2-digit hexadecimal number>

If this parameter is specified, for each logical path within the path set stored in the path set structure specified for the STEM parameter, inter-control unit logical paths will be established such that the control unit number of the remote control unit matches the value specified for this parameter. Inter-disk controller logical paths are not affected by this parameter.

If neither this parameter nor any other parameters are specified, the command establishes all inter-control unit logical paths.

PTID (*path-group-ID*) ~ <2-digit hexadecimal number>

If this parameter is specified, for each logical path within the path set stored in the path set structure specified for the STEM parameter, inter-disk controller logical paths that have the path group ID specified for this parameter are established.

If neither this parameter nor any other parameters are specified, the command establishes all the logical paths.

{FORWARD|REVERSE}

Specify the direction in which the logical path is to be established.

If neither is specified, the command will establish a bidirectional logical path.

`FORWARD`

The command establishes the logical paths that are identified in the path set stored in the path set structure specified by the `STEM` parameter. Each path extends from the initiator node defined by *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.Pri` to the target node defined by *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.Sec`, in the forward direction.

`REVERSE`

The command establishes the logical paths that are identified in the path set stored in the path set structure specified by the `STEM` parameter. Each path extends from the initiator node defined by *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.Sec` to the target node defined by *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.Pri`, in the reverse direction.

TYPE({CU|DKC})

This parameter specifies the type (inter-control unit logical path or inter-disk controller logical path) of the logical path to be established.

If neither this parameter nor any other parameters are specified, the command establishes all logical paths.

`CU`

Out of the logical paths within the path set stored in the path set structure specified by the `STEM` parameter, the logical paths that have `CU` set for *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.type` are established.

`DKC`

Out of the logical paths within the path set stored in the path set structure specified by the `STEM` parameter, the logical paths that have `DKC` set for *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.type` are established.

Notes

- Before you execute this command, create and load the path set definition file.
- If a message that contains sense information for the storage system is output, see the list of error codes in the *Hitachi Storage Management Software for Mainframe Messages* and then eliminate the cause of the error. Alternatively, in the Edit Logical Path Definition panel, specify a different, valid volume on which a device scan has been performed, in control unit, SSID, and CCA in the path set definition file for the command execution target.

- If all of the volumes in the control unit are Non Gen'ed volumes, load the route list before executing the command.
- If the storage system is directly connected to the host, the volume determined based on the following conditions is used as the I/O destination volume regardless of the specification of the `YKLOAD` command's `VIACDEV` parameter.
  - If the route list has been loaded and the command device has been defined for the target storage system, the command device is used.
  - If the route list has not been loaded, or if the route list has been loaded but the command device has not been defined for the target storage system, the volume specified in the path set definition file is used.
  - If the route list has not been loaded, or if the route list has been loaded but the command device has not been defined for the target storage system, and no volume is specified in the path set definition file, the volume specified in the disk configuration definition file is used.

Return codes

The following table lists and describes the return codes of the `YKBLDPTH` command.

Table 2-5 YKBLDPTH command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
32	• I/O error(s) were encountered. None or only some of the logical paths were established. • A change to an I/O configuration definition was detected.
36	• Processing was interrupted because a REXX variable with an invalid value was encountered. No logical paths were established. • No path to be established was found.
40	An error occurred while a REXX variable was being read or written.
44	Command execution terminated abnormally due to insufficient capacity or some other internal cause. None or only some of the logical paths were established.
48	Command execution terminated because of an invalid parameter. No logical paths were established.

Return code	Meaning
128	The command terminated abnormally. The user does not have permission to execute this command.

YKBLDRMT

Format

```
YKBLDRMT
[Δ1DD(DD-name-of-the-CLI-parameter-dataset)]
```

Function

This command is a REXX exec that requires the input parameter dataset to be allocated to a DD.

This command registers the command devices in all routes that originate from the specified DAD, regardless of the route label, based on the route list definition file specified in the input parameter.

Messages from this command are output to `SYSTSPRT`.

Parameters

DD(*DD-name-of-the-CLI-parameter-dataset*) ~ <symbolic name><<CLIPARMS>>

Specify the DD name of the CLI parameter dataset.

Parameters of the CLI parameter dataset

Format

```
[PREFIXΔ1prefix]
[DADΔ1DADID]
[ROUTEIDΔ1route-list-ID]
```

Parameters

`PREFIX` *prefix* ~ <PREFIX string of 16 or fewer characters>

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

`DAD` *DADID* ~ <DAD string>

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

`ROUTEID` *route-list-ID* ~ <ROUTE string of 8 or fewer characters>

This is a common parameter included in the default parameter dataset. For this command, specify the route list ID of the route list definition file to which command devices are to be registered.

Notes

- To execute this command, you must have permission to execute the `YKBLDCMD` command.
- This command does nothing for command devices that are already registered. However, when you enter this command, you must confirm that none of the applicable command devices are performing storage system control.
- Before executing this command, establish a path (inter-control unit logical path or inter-disk controller logical path) between storage systems.
- Before executing this command, take the applicable command devices offline.
- When multiple routes are being generated, if an error occurs for some of the routes, this command continues processing for the other routes.

Return codes

The following table lists and describes the return codes when the `YKBLDRMT` command ends.

Table 2-6 YKBLDRMT command return code list

Return code	Meaning
-3	• The script was executed in a non-TSO environment. • The module cannot be loaded.
0	The command terminated normally.
4	Unknown XML attribute(s) or element(s) were encountered in the configuration file.
32	An I/O error occurred.
36	The configuration file is invalid.
40	• `OPEN`, input, or output could not be performed for the parameter dataset. • An error occurred while a REXX variable was being read or written. • `OPEN` or input could not be performed for the configuration file.
48	There is an error in the record specified for the parameter dataset.
128	The user does not have permission to run this command.

YKCONMSG command

Applies to ShadowImage, TrueCopy, and TrueCopy with the HyperSwap attribute.

Format

```
YKCONMSG
{Δ1OP(OPEN) [Δ1MSGID({IEA494|IOSHM0414I|user-specified-message-
ID})][Δ1TIMEOUT(timeout-value)][Δ1AUTO(YES|token)]|
Δ1OP(GET)Δ1HANDLE(X'handle')|
Δ1OP(CLOSE)Δ1HANDLE(X'handle')}
```

Function

This command is a TSO/E command called from REXX scripts.

This command monitors for the following messages:

- `IEA494I` message

  Copy status display message that is output to the MVS™ console
- IOSHM0414I message

  HyperSwap completion message that is output to the MVS™ console
- User-specified message
  - A user-specified message that specified in the `MSGID` parameter.
  - User-specified messages that have `AUTO(token)` specified in the message attribute for the `MPFLST`*xx* parmlib member.

Parameters

`MSGID({IEA494|IOSHM0414I|`*user-specified-message-ID*`})`

Specifies the message to be monitored.

This parameter is not valid when the `AUTO(token)` parameter is specified.

`IEA494`
: Monitors for `IEA494I` messages.

`IOSHM0414I`
: Monitors for `IOSHM0414I` messages.

user-specified-message-ID ~ <from 6 to 10 alphanumeric characters>
: Monitors for a user-specified message.

`TIMEOUT(`*timeout-value*`)` ~ <numeric characters> ((0-60))<<15>>

Specify a timeout value for monitoring messages in seconds. The default value is `15`.

AUTO(YES|*token*)

When this parameter is specified, only messages that have AUTO(YES) or AUTO(*token*) specified in the message attribute for the MPFLST*xx* parmlib member will be monitored.

YES

Monitors a message that specified in the MSGID parameter.

For the message to be monitored, make sure to specify AUTO(YES) in the message attribute of the MPFLST*xx* parmlib member.

token ~ <from 1 to 8 alphanumeric characters>

Monitors messages that have AUTO(*token*) specified in the message attribute for the MPFLST*xx* parmlib member.

If this parameter is specified, the MSGID parameter is not valid.

This parameter cannot include blank spaces.

For details about the MPFLST*xx* parmlib member, see the IBM manual *MVS Initialization and Tuning Reference*.

For examples of specifying the AUTO parameter, see Examples of specifying the AUTO parameter on page 2-25.

OP({OPEN|GET|CLOSE})

This parameter specifies a process type.

OPEN

This parameter establishes the EMCS console interface for message monitoring. The normal termination message returns the handle value to be used in the OP(GET) and OP(CLOSE) requests.

GET

This parameter returns IEA494I messages, IOSHM0414I messages, or user-specified messages captured at the EMCS console interface in the order they were received.

If no messages were acquired, the system processes as follows:

When a value other than 0 is specified for the TIMEOUT parameter:

After the system waits for the specified number of seconds (the default value is 15 seconds), the YKA096I message is output, and the command ends with the return code 2.

When 0 is specified for the TIMEOUT parameter:

The system immediately checks if a message is output. If no message is output, the YKA096I message is output, and the command ends with the return code 2.

CLOSE

This parameter terminates the EMCS console interface for message monitoring.

HANDLE(X'*handle*') ~ <8-digit hexadecimal number>

Specify the handle to be used to associate this request to an EMCS console interface that has already been established. Specify the value returned in the YKCONMSG OP(OPEN) command's completion message as the *handle* value.

Notes

- In some configurations such as when ShadowImage and TrueCopy share volumes or a 1 to *n* (*n* is greater than 1) configuration of ShadowImage, the status transitions of each copy pair might not be correctly monitored.
- When using a copy pair on a remote site (a site that is not channel-connected directly from the local host), note the following restrictions:
  - Even if a copy pair status changes, the IEA494I message is not displayed in the MVS™ console. Thus, the YKCONMSG command cannot monitor status transitions of a copy pair on a remote site.
  - The IOSHM0414I message or user-specified messages are not displayed in the MVS™ console even when a HyperSwap is completed. Consequently, the YKCONMSG command cannot monitor the completion of HyperSwap at a remote site.
- When using a Universal Replicator copy pair, even if the copy pair status changes, the IEA494I message is not displayed on the MVS™ console. Thus, the YKCONMSG command cannot monitor the status transitions of the Universal Replicator copy pair.
- The YKCONMSG command cannot monitor Non Gen'ed volumes.

Examples of specifying the AUTO parameter

The following are examples of the YKCONMSG command with the AUTO parameter specified:

Example of monitoring the IEA494I message with AUTO(YES) specified

1. In the MPFLST*xx* parmlib member, define the following message processing record:
   IEA494I, AUTO(YES)
2. Execute the YKCONMSG OP(OPEN) AUTO(YES) command.
   Note that the MSGID parameter can be omitted because IEA494I is a default value for the MSGID parameter. For all other messages, make sure that you specify the MSGID parameter.

Example of monitoring more than one message with AUTO(*token*) specified

1. In the MPFLST*xx* parmlib member, define the following message processing records:

```
IEA494I,AUTO(TOKEN01)
IOSHM0414I,AUTO(TOKEN01)
```

2. Execute the `YKCONMSG OP(OPEN) AUTO(TOKEN01)` command.

   The `IEA494I` and the `IOSHM0414I` messages can be monitored at the same time.

Return codes

The following table lists and describes the return codes of the `YKCONMSG` command.

Table 2-7 YKCONMSG command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • APF grant has not been registered. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	Open processing terminated normally.
1	The message specified by the `MSGID` parameter (`IEA494I` message if the `MSGID` parameter was omitted), or the message associated with *token* specified in the `AUTO` parameter is returned.
2	Although the system waited for the number of seconds specified for the `TIMEOUT` parameter, no message was found.
4	Message lost since previous invocation.
6	Close successful.
8	Invalid parameter.
9	System error.

YKDEFGRP

Format

```
YKDEFGRP
[△1DD(DD-name-of-the-CLI-parameter-dataset)]
```

Function

This command is a REXX exec that requires the input parameter dataset to be allocated to a DD.

This command creates, updates, and backs up the copy group definition file.

Messages of this command are output to `SYSTSPRT`.

Parameters

DD(*DD-name-of-the-CLI-parameter-dataset*) ~ <symbolic name> <<CLIPARMS>>

Specify the DD name of the CLI parameter dataset.

Parameters of the CLI parameter dataset

The following shows the parameters to be specified for the CLI parameter dataset.

Specify a combination of the following parameters.

- Copy group identification information parameters and command operation information parameters (common to all copy types)
- Copy group attribute information parameters (common to all copy types)
- Copy group attribute information parameters (for the SI copy type)
- Copy group attribute information parameters (for the TC copy type)
- Copy group attribute information parameters (for the UR copy type)

Copy group identification information parameters and command operation information parameters (common to all copy types)

These are information parameters that identify the copy group and parameters related to the behavior of the `YKDEFGRP` command. These parameters are common to all copy types.

```
[PREFIX Δ1 configuration-file-dataset-prefix]
[DAD Δ1 DADID-of-the-host-on-which-BC-Manager-is-running]
GROUP Δ1 copy-group-ID
[BACKUPGROUP Δ1 copy-group-ID-of-the-copy-destination]
[LOADGROUP Δ1 {YES|NO}]
```

`PREFIX` *configuration-file-dataset-prefix*

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

`DAD` *DADID-of-the-host-on-which-BC-Manager-is-running*

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

`GROUP` *copy-group-ID* ~ <GROUP string>

Specify the copy group ID to be generated or updated.

Maximum length that can be specified = 44 - (5 + PREFIX length)

`BACKUPGROUP` *copy-group-ID-of-the-copy-destination* ~ <GROUP string>

Specify the copy group ID of the destination to which the copy group is replicated.

Maximum length that can be specified = 44 - (5 + PREFIX length)

If this parameter is specified, the command will make a copy before updating the copy group definition file.

This parameter is valid only when the file specified in the GROUP parameter exists and the value specified in the GROUP parameter is different from the value specified in the BACKUPGROUP parameter.

If this parameter is omitted, no copy will be made.

LOADGROUP NO{YES|}

Specify whether to load the copy group definition file specified in the GROUP parameter if the file exists. The default value is YES.

YES

Loads the copy group definition file specified in the GROUP parameter if the file exists.

If the file is loaded, of the copy group attribute information parameters, only those that are specified will be updated. (Even parameters that are normally required can be omitted.)

NO

Does not load the copy group definition file specified in the GROUP parameter even if the file exists.

A new file will be created.

Copy group attribute information parameters (common to all copy types)

These are copy group attribute information parameters that are common to all copy types.

The settings are the same as those on the Add Copy Group panel and the Copy Group Detail Definition panel.

```
[DESCRIPTION Δ1 description-of-the-copy-group]
COPYTYPE Δ1 {SI|TC|UR}
PRIDAD Δ1 primary-DADID
SECDAD Δ1 secondary-DADID
[PRISCHSET Δ1 primary-subchannel-set-ID]
[SECSCHSET Δ1 secondary-subchannel-set-ID]
```

DESCRIPTION *description-of-the-copy-group* ~ <string of 32 or fewer characters>

Specify a description of the copy group. If this parameter is omitted and no copy group definition file is loaded, a null string is assumed.

COPYTYPE {SI|TC|UR}

Specify the copy type of the copy group.

You cannot change COPYTYPE. If you want to change COPYTYPE, create a new copy group definition by specifying NO in the LOADGROUP parameter.

SI

ShadowImage (SI)

TC

TrueCopy (TC)

UR

Universal Replicator (UR)

PRIDAD *primary-DADID* ~ <DAD string>

Specify the primary device address domain ID.

SECDAD *secondary-DADID* ~ <DAD string>

Specify the secondary device address domain ID.

When the value of the COPYTYPE parameter is SI, specify the value that is specified in the PRIDAD parameter. Note that, when defining a Non Gen'ed volume and a Gen'ed volume on the same storage system as a ShadowImage (SI) copy pair, you can specify a different value (the device address domain ID specified when performing an NG scan or the one specified when performing a local scan).

PRISCHSET *primary-subchannel-set-ID* ~ <one-digit hexadecimal number>

Specify the primary subchannel set ID. For multiple subchannel set IDs, specify a value in the range from 1 to 3. For dummy subchannel set IDs, specify a value in the range from 1 to F. If this parameter is omitted and no copy group definition file is loaded, 0 is assumed.

SECSCHSET *secondary-subchannel-set-ID* ~ <one-digit hexadecimal number>

Specify the secondary subchannel set ID. The specification is the same as the PRISCHSET parameter.

The following copy group attributes are set or updated according to the values specified for each parameter above.

Table 2-8 List of attributes to be set or updated by the YKDEFGRP command (common)

Parameter name	XML element name	XML attribute name	REXX variable name
DESCRIPTION	CopyGroupContainer	Description	Description
COPYTYPE	SI_Options TC_Options UR_Options	--	CopyGroup.n.CopyType
PRIDAD	CopyGroup	PrimaryDADID	CopyGroup.n.PrimaryDADID

Parameter name	XML element name	XML attribute name	REXX variable name
SECDAD	CopyGroup	SecondaryDADID	CopyGroup.n.SecondaryDADID
PRISCHSET	CopyGroup	PrimarySCHSET	CopyGroup.n.PrimarySCHSET
SECSCHSET	CopyGroup	SecondarySCHSET	CopyGroup.n.SecondarySCHSET

Copy group attribute information parameters (for the SI copy type)

These are copy group attribute information parameters for SI copy groups.

The settings are the same as those on the Copy Group Attributes (SI) panel.

The parameters are ignored when COPYTYPE is not SI.

```
[COPYPACE Δ1 {SLOW|NORMAL|FAST}]
[PRESETMODE Δ1 {NORMAL|STEADY|QUICK}]
[PROTECTMODE Δ1 {PROTECT|PERMIT}]
```

COPYPACE {SLOW|NORMAL|FAST}

Specify the copy pace when a copy pair is created (YKMAKE command) or resynchronized (YKRESYNC command). If this parameter is omitted and no copy group definition file is loaded, NORMAL is assumed.

SLOW

The speed of the copy operation will be slower so as to minimize the impact of the copy operation on the I/O performance of the host.

NORMAL

The speed of the copy operation will be faster. However, if update I/O load on the P-VOL is high, this might affect the I/O performance of the host.

FAST

The speed of the copy operation will be even faster than when the NORMAL parameter is specified. However, because this might affect business operations, we recommend that you perform copy pair operations outside of business hours.

PRESETMODE {NORMAL|STEADY|QUICK}

Specify the type of the ATTIME suspend function and the suspend mode for the ATTIME suspend operation that you want to use when setting an ATTIME suspend time. If this parameter is omitted and no copy group definition file is loaded, NORMAL is assumed.

NORMAL

Uses the NORMAL ATTIME suspend function.

STEADY

Uses the UR ATTIME suspend function. Suspension is performed in STEADY mode.

QUICK

Uses the UR ATTIME suspend function. Suspension is performed in QUICK mode.

PROTECTMODE {PROTECT|PERMIT}

Specify whether to allow writing to the S-VOL. If this parameter is omitted and no copy group definition file is loaded, PERMIT is assumed.

PROTECT

Update of the S-VOL is prohibited after the copy pair is suspended (the YKSUSPND command is executed).

PERMIT

Update of the S-VOL is permitted after the copy pair is suspended (the YKSUSPND command is executed).

The following SI copy group attributes are set or updated according to the values specified for each parameter above.

Table 2-9 List of attributes to be set or updated by the YKDEFGRP command (SI)

Parameter name	XML element name	XML attribute name	REXX variable name
COPYPACE	CopyGroup	InitPace	CopyGroup.n.InitPace
PRESETMODE	SI_Options	AttimeSplitMode	CopyGroup.n.AttimeSplitMode
		PresetMode	CopyGroup.n.PresetMode
PROTECTMODE	CopyGroup	ProtectMode	CopyGroup.n.ProtectMode

Copy group attribute information parameters (for the TC copy type)

These are copy group attribute information parameters for TC copy groups. The settings are the same as those on the Copy Group Attributes (TC) panel. The parameters are ignored when COPYTYPE is not TC.

```
[COPYPACE Δ1{SLOW|NORMAL}]
[DIFFUNIT Δ1{CYL|TRK}]
[FENCELEVEL Δ1{DATA|STATUS|NEVER}]
[FREEZESCPMODE Δ1{Y|N}]
[LINKAGEOPTION Δ1{HS|NONE}]
[OPENMF Δ1{Y|N}]
```

```
[PROTECTMODE Δ1{PROTECT|PERMIT}]
[TIMESTAMPMODE Δ1{Y|N}]
```

COPYPACE {SLOW|NORMAL}

Specify the copy pace when a copy pair is created (YKMAKE command) or resynchronized (YKRESYNC command). If this parameter is omitted and no copy group definition file is loaded, PERMIT is assumed.

SLOW

The speed of the copy operation will be slower so as to minimize the impact of the copy operation on the I/O performance of the host.

NORMAL

The speed of the copy operation will be faster. However, if update I/O load on the P-VOL is high, this might affect the I/O performance of the host.

DIFFUNIT {CYL|TRK}

Specify the unit for managing the differential data between the P-VOL and S-VOL (differential-data management unit). If this parameter is omitted and no copy group definition file is loaded, TRK is assumed.

CYL

Differential data is managed in units of cylinders.

TRK

Differential data is managed in units of tracks.

Notes

- If TRK is specified, there is an upper limit to the number of copy pairs that can be created on each storage system. For details, see the *TrueCopy for Mainframe User Guide*.
- For VSP G1000, VSP G1500, VSP F1500, and VSP 5000 series storage systems, TRK is used even if CYL is specified.

FENCELEVEL {DATA|STATUS|NEVER}

Specify the fence level. If this parameter is omitted and no copy group definition file is loaded, NEVER is assumed.

DATA

Places the P-VOL in the fence status (updates suppressed) when updates to the P-VOL cannot be copied to the S-VOL due to a problem such as a failure.

STATUS

Places the P-VOL in the fence status (updates suppressed) when updates to the P-VOL cannot be copied to the S-VOL due to a problem such as a failure. If a P-VOL is placed in a suspended state by an operation from the primary site, updates to the P-VOL will be accepted.

NEVER

P-VOLs are never placed in the fence status (updates suppressed). Even when a copy pair is suspended, updates to a P-VOL are accepted.

Note 1

The FENCELEVEL parameter cannot be altered when a consistency group ID is specified.

Note 2

For a system volume that is used for control by the OS or by applications such as Business Continuity Manager, if you specify DATA or STATUS for the FENCELEVEL parameter to create and operate a copy pair, writing to the P-VOL is prohibited and the OS or application might hang when a problem such as a failure occurs. For this reason, if you use the system volume as a TrueCopy copy pair, specify NEVER for the FENCELEVEL parameter, or set and operate the system volume itself so that it does not become a TrueCopy copy pair.

FREEZESCPMODE {Y|N}

Specify whether to freeze a storage system (place it in the SCP status) when a failure suspension (SUSPER) occurs. If this parameter is omitted and no copy group definition file is loaded, Y is assumed.

Y

Places the storage system in the SCP status. When a copy group for which Y is specified for this parameter changes to a failure suspension status, execute the YKRUN command to cancel the SCP status. If you do not cancel the SCP status, update I/O operations from the host will be put on hold for a long period of time. Note that you cannot use the SCP Delay Time that was set by using Storage Navigator to change the time for putting update I/O operations on hold. The specification of Y is valid only for TrueCopy copy groups for which consistency group IDs are specified.

N

Does not place the storage system in the SCP status.

LINKAGEOPTION {HS|NONE}

Specify the linkage option. If this parameter is omitted and no copy group definition file is loaded, NONE is assumed.

HS

TrueCopy copy groups with the HyperSwap attribute

NONE

Copy groups other than the above

Notes

- Although you can change the definitions in Business Continuity Manager by specifying HS or NONE for the LINKAGEOPTION parameter, the changes

will not be applied to the host or storage system. If the definitions are changed on the host or storage system, make sure that you change the definitions in Business Continuity Manager so that they match the definitions on the host and storage system.

- For PPRC copy pairs in a 2DC configuration with HyperSwap and Universal Replicator, specify HS. For a TrueCopy copy group created by executing the YKH2B command, HS is displayed. If HS is displayed, Business Continuity Manager can be used only for monitoring, and the operations it can perform are limited. However, Business Continuity Manager can be used to dissolve copy pairs (by executing the YKRECVER or YKDELETE command).

OPENMF {Y|N}

Specify whether to use the Open/MF Consistency Preservation function. If this parameter is omitted and no copy group definition file is loaded, N is assumed.

Y

Uses the Open/MF Consistency Preservation function (Open/MF Consistency attribute setting).

N

Does not use the Open/MF Consistency Preservation function.

PROTECTMODE {PROTECT|PERMIT}

Specify whether to allow writing to the S-VOL. If this parameter is omitted and no copy group definition file is loaded, PROTECT is assumed.

PROTECT

Update of the S-VOL is prohibited after the copy pair is suspended (the YKSUSPND command is executed).

PERMIT

Update of the S-VOL is permitted after the copy pair is suspended (the YKSUSPND command is executed).

TIMESTAMPMODE {Y|N}

Specify whether to transfer the writing timestamp to the S-VOL (timestamp transfer mode). If this parameter is omitted and no copy group definition file is loaded, N is assumed.

Y

Transfers the timestamp to the S-VOL. Specify this value only when you are using the UR ATTIME Suspend function in a 4x4x4 Cascade configuration or a 3DC Cascade configuration.

N

Does not transfer the timestamp to the S-VOL.

The following TC copy group attributes are set or updated according to the values specified for each parameter above.

Table 2-10 List of attributes to be set or updated by the YKDEFGRP command (TC)

Parameter name	XML element name	XML attribute name	REXX variable name
COPYPACE	CopyGroup	InitPace	CopyGroup.n.InitPace
DIFFUNIT	TC_Options	Map	CopyGroup.n.TC_Map
FENCELEVEL	TC_Options	FenceLevel	CopyGroup.n.TC_FenceLevel
FREEZESCPMODE	TC_Options	FreezeScpMode	CopyGroup.n.TC_FreezeSCPMode
LINKAGEOPTION	CopyGroup	LinkageOption	CopyGroup.n.LinkageOption
OPENMF	TC_Options	OpenMF	CopyGroup.n.TC_OpenMF
PROTECTMODE	CopyGroup	ProtectMode	CopyGroup.n.ProtectMode
TIMESTAMPMODE	TC_Options	TimeStampMode	CopyGroup.n.TC_TimestampMode

Copy group attribute information parameters (for the UR copy type)

These are copy group attribute information parameters for UR copy groups. The settings are the same as those on the Copy Group Attributes (UR) panel.

The parameters are ignored when COPYTYPE is not UR.

```
[CTTIMEMODE Δ1{JOURNAL|VOLUME|ASIS}]
[ERRORLEVEL Δ1{VOLUME|GROUP}]
[MIRRORID Δ1mirror-ID]
[PROTECTMODE Δ1{PROTECT|PERMIT}]
```

CTTIMEMODE {JOURNAL|VOLUME|ASIS}

Specify the consistency time mode to be used when the copy type is Universal Replicator. If this parameter is omitted and no copy group definition file is loaded, ASIS is assumed.

JOURNAL

Uses the consistency time that was applied to the restore journal.

VOLUME

Uses the consistency time that was applied to the S-VOL.

ASIS

Behaves in the same way as when VOLUME is specified.

ERRORLEVEL {VOLUME|GROUP}

Specify the error level that determines whether all of the copy pairs in the same consistency group are suspended. If this parameter is omitted and no copy group definition file is loaded, GROUP is assumed.

VOLUME

When a failure occurs, only the affected volumes are suspended.

GROUP

When a failure occurs, all volumes in the same copy group are suspended.

MIRRORID mirror ID ~ <*number*> (0 to 3)

Specify the mirror ID by using a number in the range from 0 to 3. If this parameter is omitted and no copy group definition file is loaded, 1 is assumed.

Notes

- Do not specify 0 for MIRRORID if you are using a Universal Replicator copy group or a TrueCopy copy group in a 3DC Cascade configuration or 3DC Multi-Target configuration. Note that, in a 3DC Multi-Target configuration or a 2DC configuration where both HyperSwap and Universal Replicator are used, the mirror ID cannot be the same as any other mirror ID assigned to another Universal Replicator copy group.
- When you execute the YKMAKE command, if one or more volumes are not in the SIMPLEX status, the command might not execute correctly.

PROTECTMODE {PROTECT|PERMIT}

Specify whether to allow writing to the S-VOL. If this parameter is omitted and no copy group definition file is loaded, PROTECT is assumed.

PROTECT

Update of the S-VOL is prohibited after the copy pair is suspended (the YKSUSPND command is executed).

PERMIT

Update of the S-VOL is permitted after the copy pair is suspended (the YKSUSPND command is executed).

The following UR copy group attributes are set or updated according to the values specified for each parameter above.

Table 2-11 List of attributes to be set or updated by the YKDEFGRP command (TC)

Parameter name	XML element name	XML attribute name	REXX variable name
CTTIMEMODE	UR_Options	CTTimeMode	CopyGroup.n.UR_CTTimeMode
ERRORLEVEL	UR_Options	ErrorLevel	CopyGroup.n.UR_ErrorLevel
MIRRORID	UR_Options	MirrorID	CopyGroup.n.UR_MirrorID
PROTECTMODE	CopyGroup	ProtectMode	CopyGroup.n.ProtectMode

Return codes

The following table lists and describes the return codes when the `YKDEFGRP` command ends.

Table 2-12 YKDEFGRP command return code list

Return code	Meaning
-3	The script was run in a non-TSO environment.
0	The command terminated normally.
4	Unknown XML attribute(s) or element(s) were encountered in the configuration file.
36	The configuration file is invalid.
40	• `OPEN`, input, or output could not be performed for the parameter dataset. • An error occurred while a REXX variable was being read or written. • `OPEN` or input could not be performed for the configuration file.
44	Allocation or writing to the configuration file could not be performed.
48	There is an error in the record specified for the parameter dataset.

YKDEFRMT

Format

```
YKDEFRMT
[△1DD(DD-name-of-the-CLI-parameter-dataset)]
```

Function

This command is a REXX exec that requires the input parameter dataset to be allocated to a DD.

This command generates route list definition files and command device definition files according to the input parameters.

Messages from this command are output to `SYSTSPRT`.

Parameters

`DD`(*DD-name-of-the-CLI-parameter-dataset*) ~ <symbolic name><<CLIPARMS>>

Specify the DD name of the CLI parameter dataset.

Parameters of the CLI parameter dataset

Format

[PREFIXΔ_1*prefix*]

[ROUTEIDΔ_1*route-list-ID*]

[STORCLASΔ_1*storage-class-name*]

[VOLUMEΔ_1*volume-serial-number*]

[UNITΔ_1*device-type*]

[CFGUPDATEΔ_1{INPLACE|REALLOC}]

ROUTEΔ_1APID(APID)[Δ_1LABEL(*route-label*)]

CDEVΔ_1DAD(DADID)Δ_1DEVN(*device-number*)

[Δ_1SN(*serial-number-of-the-storage-system*)Δ_1SSID(*SSID*)Δ_1CU(*CU-number*)Δ_1CCA(*CCA-number*)]

[CDEVΔ_1DAD(*DADID*)[Δ_1DUMMY(*dummy-device-number*)]

Δ_1SN(*serial-number-of-the-storage-system*)Δ_1SSID(*SSID*)Δ_1CU(*CU-number*)Δ_1CCA(*CCA-number*)]

[CDEVΔ_1DAD(*DADID*)[Δ_1DUMMY(*dummy-device-number*)]

Δ_1SN(*serial-number-of-the-storage-system*)Δ_1SSID(*SSID*)Δ_1CU(*CU-number*)Δ_1CCA(*CCA-number*)]

[ROUTEΔ_1APID(*APID*)[Δ_1*LABEL (route (route-label)*)]

CDEVΔ_1DAD(*DADID*)Δ_1DEVN(*device-number*)

[Δ_1SN(*serial-number-of-the-storage-system*)Δ_1SSID(*SSID*)Δ_1CU(*CU-number*)Δ_1CCA(*CCA-number*)]

[ΔCDEVΔ_1DAD(*DADID*)[Δ_1DUMMY(*dummy-device-number*)]

$_1$SN(*serial-number-of-the-storage-system*)Δ_1SSID(*SSID*)Δ_1CU(*CU-number*)Δ_1CCA(*CCA-number*)]

[CDEVΔ_1DAD(*DADID*)[Δ_1DUMMY(*dummy-device-number*)]

Δ_1SN(*serial-number-of-the-storage-system*)Δ_1SSID(*SSID*)Δ_1CU(*CU-number*)Δ_1CCA(*CCA-number*)]]...

Parameters

PREFIX *prefix* ~ <PREFIX string of 16 or fewer characters>

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

ROUTEID *route-list-ID* ~ <ROUTE string of 8 or fewer characters>

This is a common parameter included in the default parameter dataset. For this command, specify the route list ID of the route list definition file to be generated.

STORCLAS *storage-class-name* ~ <storage class name string>

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

VOLUME *volume-serial-number* ~ <volume serial number string>

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

UNIT *device-type* ~ <device type string>

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

CFGUPDATE {INPLACE|REALLOC}

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

ROUTE

Specify the APID of the command device line and the route label.

APID(*APID*) ~ <four-digit hexadecimal number>

Specify the APID.

LABEL(*route-label*) ~ <ROUTELABEL string of 8 or fewer characters>

Specify the route label.

CDEV

Specify volume information about the command device. The command device specified here is the one whose APID was specified for the ROUTE parameter above. Define this parameter in the order of connection.

DAD(*DADID*) ~ <DAD string>

Specify the DADID to which the command device belongs. The specified string must consist of no more than 28 characters or 44 - (13 + PREFIX length) characters, whichever is smaller.

DEVN(*device-number*) ~ <four- or five-digit hexadecimal number> ((00000 ~ 3FFFF))

Specify the device number of the command device and the subchannel set ID.

DUMMY(*dummy-device-number*) ~ <four- or five-digit hexadecimal number> ((00000 ~ 3FFFF))

Specify the dummy device number of the command device and the dummy subchannel set ID.

SN(*serial-number-of-the-storage-system*) ~ <alphanumeric string of 5 to 12 characters>

Specify the serial number of the storage system to which the command device belongs.

`SSID`(*SSID*) ~ <four-digit hexadecimal number>

Specify the SSID of the CU to which the command device belongs.

`CU`(*CU-number*) ~ <two-digit hexadecimal number>

Specify the CU number of the CU to which the command device belongs.

`CCA`(*CCA-number*) ~ <two-digit hexadecimal number>

Specify the CCA number of the command device.

Notes

If you omit the `SN`, `SSID`, `CU`, and `CCA` operands for a `CDEV` parameter for which the `DEVN` operand is specified, a local scan including a scan of command devices must be completed in advance.

Return codes

The following table lists and describes the return codes when the `YKDEFRMT` command ends.

Table 2-13 YKDEFRM command return code list

Return code	Meaning
-3	The command was executed in a non-TSO environment.
0	The command terminated normally.
40	• `OPEN`, input, or output could not be performed for the parameter dataset. • An error occurred while a REXX variable was being written.
44	Allocation or writing to the configuration file could not be performed.
48	There is an error in the record specified for the parameter dataset.

YKDELCMD command

Applies to CMD.

Format

```
YKDELCMD
{△1SN(storage-system-serial-number)|
△1SN(storage-system-serial-number)△1CU(cu-number)△1CCA(cca-number)
△1APID(apid)|
△1DEVN(device-number)△1APID(apid)}
△1MSG(stem-name-1)
```

Function

This command is a TSO/E command called from REXX scripts.

The command deletes, from the storage system, the command device that was specified in the route list that was loaded before this command was executed.

Parameters

SN(*storage-system-serial-number*) ~ <from 5 to 12 alphanumeric characters>

When you delete the command device for a storage system in the route list, specify the storage system serial number.

SN(*storage-system-serial-number*) CU(*CU-number*) CCA(*CCA-number*) APID(*APID*)

When you specify and delete a command device in the route list, specify the serial number of the storage system, CU number, CCA number, and APID for the command device.

SN(*storage-system-serial-number*) ~ <from 5 to 12 alphanumeric characters>

Specify the storage system serial number.

CU(*CU-number*) ~ <two-digit hexadecimal number>

Specify the CU number.

CCA(*CCA-number*) ~ <two-digit hexadecimal number>

Specify the CCA number.

APID(*APID*) ~ <four-digit hexadecimal number>

Specify the APID.

DEVN(*device-number*) APID(*APID*)

When you specify and delete a command device, specify the device number and the APID of the command device.

Only when you specify this parameter do you not have to load the route list. The DEVN parameter cannot be specified for the remotely connected storage systems.

DEVN(*device-number*) ~ < 4- or 5- digit hexadecimal number>((00000-3FFFF))

Specify the device number.

When multiple subchannel sets are used, specify this parameter as a 5-digit number by adding the 1-digit subchannel set ID before the device number. If the subchannel set ID is omitted, 0 is assumed.

`APID(APID)` ~ <four-digit hexadecimal number>

Specify the APID.

MSG(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the `MSG` parameter is called.

Notes

- For the `YKDELCMD` command, you must input the storage system for the Primary site and Secondary site, according to the reverse of the site order defined in the route list. Be sure to perform input in the order of the secondary site and primary site.
- If you delete command devices for a storage system for which multiple command devices have been defined, processing continues even if an error occurs for one or more of the command devices.
- When deleting a command device not specified in the route list on the remote storage system, before executing this command, you must create a command device that can be run on the corresponding storage system.

Return codes

The following table lists and describes the return codes of the `YKDELCMD` command.

Table 2-14 YKDELCMD command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
32	• One or more I/O error was encountered. • A change in an I/O configuration definition was detected.
40	An error occurred while a REXX variable was being written.
44	Termination due to processing errors.
48	Termination due to an invalid parameter.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKDELCNF

Format

```
YKDELCNF
[Δ1DD(DD-name-of-the-CLI-parameter-dataset)]
```

Function

This command is a REXX exec that requires the input parameter dataset to be allocated to a DD.

This command deletes the following configuration files.

- Deletes the route list definition file and all command device definition files in the route list
- Deletes the disk configuration definition file
- Deletes the copy group definition file

Messages from this command are output to `SYSTSPRT`.

Parameters

DD(*DD-name-of-the-CLI-parameter-dataset*) ~ <symbolic name> <<CLIPARMS>>

Specify the DD name of the CLI parameter dataset.

Parameters of the CLI parameter dataset

Specify the parameters to be specified for the CLI parameter dataset.

Format

```
[PREFIXΔ1dataset-prefix-for-the-configuration-files]
[DELETEΔ1ROUTE(route-list-ID)]
[DELETEΔ1DSKΔ1SN(serial-number-of-the-storage-system)Δ1DAD(DADID)]
[DELETEΔ1GROUP(copy-group-ID)]
```

Parameters

`PREFIX` *dataset-prefix-for-the-configuration-files*

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

`DELETE`

Specify this to delete configuration files. Specify the type of configuration files that you want to delete and the parameters defined by the file type.

`ROUTE`(*route-list-ID*) ~ <ROUTE string of 8 or fewer characters>

Specify this to delete the route list file. Specify the route list ID of the route list definition file that you want to delete. The command deletes the specified route list as well as any command device definition files that will no longer be needed after the route list is deleted.

DSK

Specify this to delete a disk configuration information file.

SN(*serial-number-of-the-storage-system*) ~ <five-character alphanumeric string>

Specify the storage serial number of the disk configuration information file that you want to delete.

DAD(*DADID*) ~ <DAD string>

Specify the DADID of the disk configuration information file that you want to delete.

GROUP(*copy-group-ID*) ~ <GROUP string>

Specify this to delete copy group definition files. Specify the copy group ID of the copy group definition file that you want to delete.

Notes

- You can specify more than one DELETE parameter.
- If you want to specify the DELETE ROUTE parameter, before executing the YKDELCNF command, run the YKDELRMT command to make sure that there are no defined command devices left in the route list.
- If you want to specify the DELETE GROUP parameter, before running the YKDELCNF command, run the YKDELETE command to release copy pairs defined in the copy group to be deleted.

Example

The following is a sample script of the CLI parameter dataset for the YKDELCNF command.

The route list definition files and command device definition files before running the YKDELCNF command are follows:

- USERID.PREFIXA.ROUTE.ROUTE1: A route list definition file

```
<RouteList ID="ROUTE1">
<Route DADID="DAD1" priority="1">
...
```

- USERID.PREFIXA.ROUTE.ROUTE2: A route list definition file

```
<RouteList ID="ROUTE2">
<Route DADID="DAD2" priority="1">
...
```

- USERID.PREFIXA.CDEV.DAD1: A command device definition file
- USERID.PREFIXA.CDEV.DAD2: A command device definition file

- USERID.PREFIXB.ROUTE.ROUTEB: A command device definition file

```
<RouteList ID="ROUTEB">
<Route DADID="DADB" priority="1">
...
```

- USERID.PREFIXB.CDEV.DADB: A command device definition file

The following is a sample script of the CLI parameter dataset for the YKDELCNF command.

```
PREFIX USERID.PREFIXA
DELETE ROUTE(ROUTE2)
```

After the YKDELCNF command is executed in the above environment, the route list definition files and command device definition files are as follows.

- USERID.PREFIXA.ROUTE.ROUTE1
- USERID.PREFIXA.CDEV.DAD1
- USERID.PREFIXB.ROUTE.ROUTEB
- USERID.PREFIXB.CDEV.DADB

The route list definition file USERID.PREFIXA.ROUTE.ROUTE2 that was specified for the DELETE ROUTE parameter and the command device definition file USERID.PREFIX1.CDEV.DAD2 that was referenced only by this route list definition file have been deleted. USERID.PREFIXA.CDEV.DAD1 was not deleted because it is referenced by another route list definition file, USERID.PREFIXA. ROUTE.ROUTE1. USERID.PREFIXB.CDEV.DADB was not deleted because it has a different PREFIX.

Return codes

The following table lists and describes the return codes when the YKDELCNF command ends.

Table 2-15 YKDELCNF command return code list

Return code	Meaning
-3	The command was executed in a non-TSO environment.
0	The command terminated normally.
36	The configuration file is invalid.
40	• OPEN, input, or output could not be performed for the parameter dataset. • An error occurred while a REXX variable was being written. • The configuration file could not be found. • OPEN or input could not be performed for the configuration file.
48	There is an error in the record specified for the parameter dataset.

YKDELETE command

Applies to ShadowImage, TrueCopy, TrueCopy with the HyperSwap attribute, and Universal Replicator.

Format

```
YKDELETE
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
[Δ1DEVN(p-vol-device-number,s-vol-device-number)|ORDER(stem-name-3)]
[Δ1SELECT({ALL|COND})]
```

Function

This command is a TSO/E command called from REXX scripts.

This command dissolves a copy pair for the specified copy group and changes the volume status to the `SIMPLEX` status.

When dissolving copy pairs in a copy group container with EXCTG ID, if all copy pairs are dissolved from a journal group, that journal group will be dissolved from the EXCTG. In addition, if all journal groups are dissolved from the EXCTG, the EXCTG data will be deleted.

If the copy pair to be dissolved is in the `SIMPLEX` status or any status that cannot be dissolved because of the attributes in the copy group structure, the command creates an error message in the message structure and returns a non-zero return code.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the copy group structure that stores information about the copy group to be dissolved. Specify the same character string as the one specified in the `STEM` parameter of the `YKLOAD` command that loaded the corresponding copy group. The last character must be a period (`.`).

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (`.`).

The message structure is initialized when the CLI command with the same name as the `MSG` parameter is called.

DEVN (*p-vol-device-number*, *s-vol-device-number*) ~ <4-digit hexadecimal number, 4-digit hexadecimal number>

Specify the device number of the copy pair (P-VOL and S-VOL) to operate. If the UR ATTIME suspend time has been set for the target copy group, execute the YKSUSPND command with the CANCEL parameter specified to cancel the UR ATTIME suspend time before you execute the YKDELETE command with the DEVN parameter specified.

ORDER (*stem-name-3*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the ORDER structure. If you specify this parameter, you can delete only the relevant copy pairs in the order they are specified in the ORDER structure. The last character must be a period (.). If the UR ATTIME suspend time has been set for the target copy group, execute the YKSUSPND command with the CANCEL parameter specified to cancel the UR ATTIME suspend time before you execute the YKDELETE command with the ORDER parameter specified.

SELECT({ALL|COND})

Specify the method used to select the copy pairs that are to be affected by this command. The default is ALL.

ALL

All the copy pairs in the copy group are affected by the command. Note that if the DEVN parameter is specified, the copy pair specified for the parameter becomes the execution target of the command. If the ORDER parameter is specified, the copy pairs specified for the ORDER parameter become the execution targets of the command.

COND

Only pairs with certain volume statuses are affected by the command. If copy pairs that are not affected by the command are included in the copy group, the processing terminates with the return code 4. For details on the copy pairs that are affected by the command, see the table "Copy pair statuses for which commands with SELECT(COND) specified are subject to processing" in the *Hitachi Business Continuity Manager User Guide*.

Notes

- Do not execute the YKDELETE command during planned outage operation (when switching the P-VOL and S-VOL). To dissolve the copy pair, switch the P-VOL and S-VOL again, return the P-VOL to the primary site (restore normal operation), and then dissolve the copy pair.
- When operating the copy groups of a copy pair that was deleted by specifying the DEVN parameter or the ORDER parameter, for the time that the copy pair is being synchronized, make sure that you specify the SELECT(COND) parameter.

- For EXCTG, if you execute the YKDELETE command and then the YKQUERY command to obtain the copy pair status, the YKZ296E message sometimes appears when the dissolving of the copy pair is detected at a different time from the dissolving of EXCTG, but this does not mean that an error has occurred. For this reason, for EXCTG, we recommend that you execute the YKDELETE command and then the YKEWAIT GOTO(SIMPLEX) command, wait until the copy pair status changes to SIMPLEX, and then execute the YKQUERY command.
- In 4x4x4 Delta Resync configurations, when all copy pairs in EXCTG whose copy direction is from the primary site to the remote site are dissolved, the journal groups whose copy direction is from the local site to the remote site are also dissolved from EXCTG registration.

  For example, if a Delta Resync is executed and then the YKDELETE command is executed when EXCTG is in the HOLD status and the copy direction is from the primary site to the remote site, the journal groups whose status is DUPLEX and copy direction is from the local site to the remote site are dissolved from EXCTG registration. As a result, the YKZ296E message is output if the YKQUERY command is executed to obtain the status of Universal Replicator copy pairs whose copy direction is from the local site to the remote site. In this case, perform either of the following operations to register journal groups in EXCTG for the storage system:

  - Execute the YKMAKE HOLD command for Universal Replicator copy pairs whose copy direction is from the primary site to the remote site.
  - Execute the YKMAKE command with a SELECT(COND) specified for Universal Replicator copy pairs whose copy direction is from the local site to the remote site.

Return codes

The following table lists and describes the return codes of the YKDELETE command.

Table 2-16 YKDELETE command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
4	Since a volume with an invalid status was found in the copy group, processing for the volume will be skipped.
32	• One or more I/O error was encountered. • A change in an I/O configuration definition was detected.
36	Invalid or missing data in a REXX variable.

Return code	Meaning
40	An error occurred while a REXX variable was being written.
44	Termination due to processing errors.
48	Termination due to invalid parameters. For example, as in the following case: • When the copy pair corresponding to the device number specified with the DEVN parameter is not found.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKDELPTH command

Applies to PTH.

Format

```
YKDELPTH
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
[Δ1PSN(storage-system-serial-number)[Δ1PCU(cu-number)]]
[Δ1SSN(storage-system-serial-number)[Δ1SCU(cu-number)]]
[Δ1PTID(path-group-ID)]
[Δ1{FORWARD|REVERSE}]
[Δ1FORCE]
[Δ1TYPE({CU|DKC})]
```

Function

This command is a TSO/E command called from REXX scripts.

This command deletes some or all of the logical paths identified in the path set that is stored in the path set structure with the prefix specified by the STEM parameter.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the path set structure that stores information about the logical paths to be deleted. Specify the same character string as the one specified in the STEM parameter of the YKLOAD command that loaded the corresponding logical path. The last character must be a period (.).

MSG (*stem-name2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the MSG parameter is called.

PSN (*storage-system-serial-number*) ~ <from 5 to 12 alphanumeric characters>

If this parameter is specified, for each logical path within the path set stored in the path set structure specified for the STEM parameter, inter-control unit logical paths will be deleted in all cases where the paths treat control units within storage systems (that have the serial number specified by this parameter) as main control units, and inter-disk controller logical paths will be deleted in all cases where the paths treat the storage system (that has the serial number specified by this parameter) as the primary storage system.

If neither this parameter nor any other parameters are specified, the command deletes all non-shared logical paths.

PCU (*cu-number*) ~ <2-digit hexadecimal number>

If this parameter is specified, out of the logical paths within the path set stored in the path set structure specified for the STEM parameter, inter-control unit logical paths will be deleted in all cases where the control unit number of the main control unit matches the value specified for this parameter. Inter-disk controller logical paths are not affected by this parameter.

If neither this parameter nor any other parameters are specified, the command deletes all non-shared inter-control unit logical paths.

SSN (*storage-system-serial-number*) ~ <from 5 to 12 alphanumeric characters>

If this parameter is specified, out of the logical paths within the path set stored in the path set structure specified for the STEM parameter, inter-control unit logical paths will be deleted in all cases where the paths treat control units within storage systems (that have the serial number specified by this parameter) as remote control units, and inter-disk controller logical paths will be deleted in all cases where the paths treat the storage system (that has the serial number specified by this parameter) as the secondary storage system.

If this parameter is not specified, the command deletes all logical paths with non-shared attributes unless another parameter is specified.

SCU(*cu-number*) ~ <2-digit hexadecimal number>

If this parameter is specified, out of the logical paths within the path set stored in the path set structure specified for the STEM parameter, inter-control unit logical paths will be deleted in all cases where the control unit number of the remote control unit matches the value specified for this parameter. Inter-disk controller logical paths are not affected by this parameter.

If this parameter is not specified, the command deletes all inter-control unit logical paths with non-shared attributes unless another parameter is specified.

PTID(*path-group-ID*) ~ <2-digit hexadecimal number>

If this parameter is specified, for each logical path within the path set stored in the path set structure specified for the STEM parameter, inter-disk controller logical paths that have the path group ID specified for this parameter are deleted.

If neither this parameter nor any other parameters are specified, the command deletes all non-shared logical paths.

{FORWARD|REVERSE}

Specify the direction in which the logical path is to be deleted.

If neither is specified, the command will delete a bidirectional logical path.

FORWARD

The command deletes logical paths that are identified in the path set stored in the path set structure specified by the STEM parameter, each of which is the forward logical path from the initiator node defined by *stem-name-specified-in-STEM-parameter*PATH.*n*.Pri to the target node defined by *stem-name-specified-in-STEM-parameter*PATH.*n*.Sec.

REVERSE

The command deletes logical paths that are identified in the path set stored in the path set structure specified by the STEM parameter. Each path is a reverse logical path from the initiator node defined by *stem-name-specified-in-STEM-parameter*PATH.*n*.Sec to the target node defined by *stem-name-specified-in-STEM-parameter*PATH.*n*.Pri.

FORCE

If this parameter is specified, of those logical paths that are identified in the path set stored in the path set structure specified by the STEM parameter, the command also deletes the paths that have the shared attribute (those with the value Y assigned to *stem-name-specified-in-STEM-parameter*PATH.*n*.Shared).

If this parameter is not specified, the command does not delete logical paths that have the shared attribute.

TYPE({CU|DKC})

This parameter specifies the type (inter-control unit logical path or inter-disk controller logical path) of the logical path to be deleted.

If neither this parameter nor any other parameters are specified, the command deletes all logical paths.

`CU`

Out of the logical paths within the path set stored in the path set structure specified by the `STEM` parameter, the logical paths that have `CU` set for *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.type` are deleted.

`DKC`

Out of the logical paths within the path set stored in the path set structure specified by the `STEM` parameter, the logical paths that have `DKC` set for *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.type` are deleted.

Notes

- Before executing the command, create and load the path set definition file.
- If a message that contains sense information for the storage system is output, see the list of error codes in the *Hitachi Storage Management Software for Mainframe Messages* and then eliminate the cause of the error. Alternatively, in the Edit Logical Path Definition panel, specify a different, valid volume on which a device scan has been performed, in control unit, SSID, and command control address in the path set definition file for the command execution target.
- If all of the volumes in the control unit are Non Gen'ed volumes, load the route list before executing the command.
- If the storage system is directly connected to the host, the volume determined based on the following conditions is used as the I/O destination volume regardless of the specification of the `YKLOAD` command's `VIACDEV` parameter.
    - If the route list has been loaded and the command device has been defined for the target storage system, the command device is used.
    - If the route list has not been loaded, or if the route list has been loaded but the command device has not been defined for the target storage system, the volume specified in the path set definition file is used.
    - If the route list has not been loaded, or if the route list has been loaded but the command device has not been defined for the target storage system, and no volume is specified in the path set definition file, the volume specified in the disk configuration definition file is used.

Return codes

The following table lists and describes the return codes of the `YKDELPTH` command.

Table 2-17 YKDELPTH command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
32	• One or more I/O error was encountered. None or only some of the logical paths was deleted. • A change in an I/O configuration definition was detected.
36	• Processing was interrupted because a REXX variable with an invalid value was encountered. None or only some of the logical paths were deleted. • No path to be deleted was found.
40	An error occurred while a REXX variable was being read or written.
44	Command execution terminated abnormally due to insufficient capacity or some other internal cause. None or only some of the logical paths were deleted.
48	Command execution terminated because of an invalid parameter. No logical paths were deleted.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKDELRMT

Format

```
YKDELRMT
[△1DD(DD-name-of-the-CLI-parameter-dataset)]
```

Function

This command is a REXX exec that requires the input parameter dataset to be allocated to a DD.

This command deletes the command devices in all routes that originate from the specified DAD, regardless of the route label, based on the route list definition file specified in the input parameter.

Messages from this command are output to `SYSTSPRT`.

Parameters

DD(*DD-name-of-the-CLI-parameter-dataset*) ~ <symbolic name><<CLIPARMS>>

Specify the DD name of the CLI parameter dataset.

Parameters of the CLI parameter dataset

Format

[PREFIXΔ_1*prefix*]

[DADΔ_1*DADID*]

[ROUTEIDΔ_1*route-list-ID*]

Parameters

PREFIX *prefix* ~ <PREFIX string of 16 or fewer characters>

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

DAD *DADID* ~ <DAD string>

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

ROUTEID *route-list-ID* ~ <ROUTE string of 8 or fewer characters>

This is a common parameter included in the default parameter dataset. For this command, specify the route list ID of the route list configuration file from which command devices are to be deleted.

Notes

- To execute this command, you must have permission to execute the YKDELCMD command.
- If an error occurs for some of the command devices, this command continues processing for other the command devices.

Return codes

The following table lists and describes the return codes when the YKDELRMT command ends.

Table 2-18 YKDELRMT command return code list

Return code	Meaning
-3	• The command was executed in a non-TSO environment. • The module cannot be loaded.
0	The command terminated normally.

Return code	Meaning
4	Unknown XML attribute(s) or element(s) were encountered in the configuration file.
32	An I/O error occurred.
36	The configuration file is invalid.
40	• OPEN, input, or output could not be performed for the parameter dataset. • An error occurred in the reading or writing of a REXX variable. • OPEN or input could not be performed for the configuration file.
48	There is an error in the record specified for the parameter dataset.
128	The user does not have permission to execute the command.

YKDEXCTG command

Applies to Universal Replicator.

Format

```
YKDEXCTG
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
[Δ1SN(storage-system-serial-number)[Δ1JNLG(journal-ID)]]
```

Function

This is a TSO/E command.

This command dissolves the journal group in the specified copy group container with EXCTG ID from an EXCTG.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specifies the prefix of the copy group structure that contains the copy group container with EXCTG ID for which you want to dissolve the journal group. Specify the same character string as you specified for the STEM parameter of the YKLOAD command that was used to load the copy group. The last character must be a period (.).

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specifies a prefix for the name of the message structure used to store messages generated by this command. The last character must be a period (.).

The message structure is reinitialized whenever a CLI command is called with the same name specified for the MSG parameter.

SN(*storage-system-serial-number*) ~ <from 5 to 12 alphanumeric characters>

Specify the serial number of the storage system that contains journal groups to be dissolved from an EXCTG. All journal groups contained in the specified storage system within the copy group container with EXCTG ID are dissolved.

If this parameter is omitted, all journal groups within the copy group container with EXCTG ID are dissolved.

JNLG(*journal-ID*) ~ <2-digit hexadecimal number>

Among the storage systems specified for the SN parameter, specify the journal ID of the journal group to be dissolved from an EXCTG. Specify either the journal ID of the primary site or the journal ID of the secondary site.

Notes

- If a journal group that was already dissolved from an EXCTG is included in the journal groups to be dissolved, the YKZ257E message is output. However, journal groups that can be dissolved will be dissolved.
- A journal group cannot be dissolved from an EXCTG while the processing to register the journal group in the EXCTG is still running. Wait for the registration processing to finish, and then execute the YKDEXCTG command again.

Return codes

The following table lists and describes the return codes of the YKDEXCTG command.

Table 2-19 YKDEXCTG command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command terminated normally.

Return code	Meaning

32	• An I/O error occurred. For example, as in the following case:
	  ○ A journal group that was already dissolved from an EXCTG is included in journal groups to be dissolved.
	  ○ A copy group container that is not registered in an EXCTG is specified.
	• A change was detected in the I/O configuration definition.

36	An invalid or unknown structure was found.
44	The command terminated due to a processing error.
48	The command terminated due to invalid parameters. For example, as in the following case: • The JNLG parameter is specified but the SN parameter is not specified. • No journal group exists in the storage system specified for the SN parameter. • The journal specified for the JNLG parameter does not exist in the storage system specified for the SN parameter.
128	The command terminated abnormally. The user does not have the permissions necessary to execute this command.

YKDROP command

Format

To drop all REXX variable structures:

```
YKDROP("ALL")
```

To drop only specific REXX variable structures:

```
YKDROP("{GRP|PTH}","stem-name")
```

Function

This is a REXX function called from REXX scripts.

This function can either drop all the valid REXX variable structures in the script, or drop only the REXX variable structures with a specific stem name.

Parameters

ALL

Drops all the valid REXX variable structures (copy group structures, route list structures, path set structures, Host-Discovered Array Index structures, Host-Discovered Array structures, and STEM Index structures) in the script.

{GRP|PTH}

Drops the REXX variable structures with a specific stem name.

GRP

Drops the REXX variable structures related to copy group structures with a specific stem name.

PTH

Drops the REXX variable structures related to path set structures with a specific stem name.

stem-name ~ <REXX prefix of 64 or fewer characters>

For either the GRP or the PTH parameter, specify the prefix of the copy group structure related to the REXX variable structures to be dropped. If you specify the GRP parameter, the REXX variable structures related to the copy group structures will be dropped. If you specify the PTH parameter, the REXX variable structures related to the path set structures will be dropped.

Specifies the prefix of the copy group structure that contains information about the copy groups whose REXX variable structures are to be dropped.

This must be the same as the character string that was specified in the STEM parameter of the YKLOAD command that was used to load the target copy group. The last character must be a period (.).

Notes

- The YKDROP command cannot be executed on REXX variables that have not been loaded via the YKLOAD command.
- Do not execute the REXX DROP statement to disable REXX variables that have been loaded via the YKLOAD command. The YKDROP command cannot be executed on disabled REXX variables.
- Do not initialize REXX variables that have been loaded via the YKLOAD command. The YKDROP command cannot be executed on initialized REXX variables.

Example

An example of the YKDROP command follows:

```
                              :
DO all_copygroups
  @DROPRES = YKDROP("ALL");
  CALL YKLOAD "GROUP(one_copygroup) ROUTE(routelist) PREFIX(BCMPRFX)   ",
     "       STEM(MYCG.) MSG(MYMSG.) DAD(dadid)               ";
                              :
ADDRESS TSO "YKQUERY STEM(MYCG.) MSG(MYMSG.)"
                              :
END
```

Return codes

The following table lists and describes the return codes of the YKDROP command.

Table 2-20 YKDROP command return code list

Return code	Meaning
0	The command terminated normally.
48	The caller is not a REXX environment (environment error).
1004	There is an error in the specified process classification.
1008	The specified process classification is invalid.
1012	There is an error in the specified stem name.
1016	The specified stem name is invalid.
1032	Internal information-table release processing resulted in an error.
1044	An error occurred while a REXX variable was being accessed. Possible causes are as follows: • REXX variables loaded via the YKLOAD command cannot be found. • REXX variables loaded via the YKLOAD command are disabled or initialized. • The return code of the IRXEXCOM routine (R15) is -2, -1, 28, or 32.
2000	A system error occurred.

YKDSPGRP

Format

```
YKDSPGRP
[△1DD(DD-name-of-the-CLI-parameter-dataset)]
```

Function

This command is a REXX exec that requires the input parameter dataset to be allocated to a DD.

This command outputs the content of copy group definition files. The execution results are output to SYSTSPRT.

Parameters

DD(*DD-name-of-the-CLI-parameter-dataset*) ~ <symbolic name> <<CLIPARMS>>

Specify the DD name of the CLI parameter dataset.

Parameters of the CLI parameter dataset

Specify the parameters to be specified for the CLI parameter dataset.

Format

[PREFIX Δ1 *dataset-prefix-for-the-configuration-files*]

[DAD Δ1 *DADID-of-the-host-on-which-BC-Manager-is-running*]

GROUP Δ1 *copy-group-ID*

[PAIRINFO Δ1 {ON|OFF}]

Parameter

PREFIX *dataset-prefix-for-the-configuration-files*

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

DAD *DADID-of-the-host-on-which-BC-Manager-is-running*

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

GROUP *copy-group-ID* ~ <GROUP string>

Specify the ID of the copy group for which the content of configuration files is to be output.

Maximum length that can be specified = 44 - (5 + PREFIX length)

PAIRINFO {ON|OFF}

Specify whether to display copy pair information. If this parameter is omitted, the default value ON is assumed.

ON

Displays copy pair information.

OFF

Does not display copy pair information.

Display format

Definition file, copy group container, copy group, SI/TC/UR option information

Information is displayed in the following format:

Item name Δn *value*

The following table lists and describes the displayed items.

Table 2-21 YKDSPGRP command display item list (information about common definition files)

Item	XML element	XML attribute	Description
PREFIX	--	--	Prefix for configuration files

Item	XML element	XML attribute	Description
DAD	--	--	Local DADID

Table 2-22 YKDSPGRP command display item list (information about common CG containers)

Item	XML element	XML attribute	Description
GROUP	CopyGroupContainer	ContainerID	Copy group ID
DESCRIPTION	CopyGroupContainer	Description	Description of the copy group

Table 2-23 YKDSPGRP command display item list (information about common copy groups)

Item	XML element	XML attribute	Description
PRIDAD	CopyGroup	PrimaryDADID	Primary DADID
SECDAD	CopyGroup	SecondaryDADID	Secondary DADID
PRISCHSET	CopyGroup	PrimarySCHSET	Primary subchannel set ID
SECSCHSET	CopyGroup	SecondarySCHSET	Secondary subchannel set ID
COPYTYPE	SI_Options TC_Options UR_Options	--	Copy type of the copy group
PROTECTMODE	CopyGroup	ProtectMode	Protect mode

Table 2-24 YKDSPGRP command display item list (information about SI options)

Item	XML element	XML attribute	Description
COPYPACE	CopyGroup	InitPace	Copy pace
PRESETMODE	SI_Options	PresetMode	Suspend mode to be used for the ATTIME suspend function
ATTIMESPLITMODE	SI_Options	AttimeSplitMode	Whether to use the ATTIME suspend function

Table 2-25 YKDSPGRP command display item list (information about TC options)

Item	XML element	XML attribute	Description
COPYPACE	CopyGroup	InitPace	Copy pace
DIFFUNIT	TC_Options	Map	Unit for managing differential data
FENCELEVEL	TC_Options	FenceLevel	Handling of the P-VOL after it is suspended

Item	XML element	XML attribute	Description
FREEZESCPMODE	TC_Options	FreezeScpMode	Whether to place the storage system into the SCP status when SUSPER occurs
LINKAGEOPTION	CopyGroup	LinkageOption	Linkage option
OPENMF	TC_Options	OpenMF	Whether to use the Open/MF consistency preservation function
TIMESTAMPMODE	TC_Options	TimeStampMode	Whether to use timestamp transfer mode

Table 2-26 YKDSPGRP command display item list (UR option information)

Item	XML element	XML attribute	Description
CTTIMEMODE	UR_Options	CTTimeMode	Consistency time mode
ERRORLEVEL	UR_Options	ErrorLevel	Unit when the UR copy pair is suspended
MIRRORID	UR_Options	MirrorID	Mirror ID

EXCTG information

When the EXCTG function is not used, items are displayed in the following format:

```
EXCTG DISABLE
```

When the EXCTG function is used during a forward operation, items are displayed in the following format:

```
EXCTG FWD ID(aaaa) SN(bbbbb) MODEL(cccc)
EXCTG REV DISABLE
```

When the EXCTG function is used during a reverse operation, items are displayed in the following format:

```
EXCTG FWD DISABLE
EXCTG REV ID(aaaa) SN(bbbbb) MODEL(cccc)
```

The following table lists and describes the displayed items.

Table 2-27 YKDSPGRP command display item list (EXCTG information during a forward operation)

Item	XML element	XML attribute	Description
ID	EX_DefInfo	FwdExctgID	EXCTG ID during a forward operation
SN	EX_DefInfo	FwdSuper_Model	Model of the supervisor disk controller during a forward operation
MODEL	EX_DefInfo	FwdSuper_SerialNum	Serial number of the supervisor disk controller during a forward operation

Table 2-28 YKDSPGRP command display item list (EXCTG information during a reverse operation)

Item	XML element	XML attribute	Description
ID	EX_DefInfo	RevExctgID	EXCTG ID during a reverse operation
SN	EX_DefInfo	RevSuper_Model	Model of the supervisor disk controller during a reverse operation
MODEL	EX_DefInfo	RevSuper_SerialNum	Serial number of the supervisor disk controller during a reverse operation

Group ID information

Information is displayed in the following format:

```
      --- PRI -- --- SEC --
 GRP# SN    CTID SN    CTID PathID  Pair
aaaaa bbbbb   cc ddddd   ee     ff ggggg
```

The following table lists and describes the displayed items.

Table 2-29 YKDSPGRP command display item list (information about common group IDs)

Large item	Small item	XML element	XML attribute	Description
--	GRP#	--	--	Copy group number
PRI	SN	DiskDevice	SerialNum	Primary DADID
	CTID	SI_Options TC_Options UR_Options	GroupID	(SI/TC) C/T group ID (UR) M-JNL group ID
SEC	SN	DiskDevice	SerialNum	Secondary DADID
	CTID	UR_Options	subGroupID	R-JNL group ID
--	PathID	UR_Options	PathID	Path group ID
--	Pair	--	--	Number of copy pairs

Pair information

Information is displayed in the following format:

```
 GRP# PAIR# P/S DEVN SN    SSID CU CCA VOLSER       CYLS
aaaaa bbbbb PRI cccc ddddd eeee ff gg  hhhhhh iiiiiiiiii
aaaaa bbbbb SEC cccc ddddd eeee ff gg  hhhhhh iiiiiiiiii
```

The following table lists and describes the displayed items.

Table 2-30 YKDSPGRP command display item list (information about common pairs)

Item	XML element	XML attribute	Description
P/S	--	--	PRI: P-VOL information SEC: S-VOL information
DEVN	HostAddressedDisk	Devn	Device number
SN	DiskDevice	SerialNum	Serial number of the storage system
SSID	DiskDevice	SSID	SSID
CU	DiskDevice	CUNum	CU number
CCA	DiskDevice	CCA	CCA
VOLSER	HostAddressedDisk	Volser	Volume serial number
CYLS	DiskDevice	Cyls	Volume capacity

Notes

- The size of the space required by SYSTSPRT is calculated as follows: 1 × number of copy groups + 2 × number of pairs + 30 rows
- If there are a large number of copy pairs, specify OFF for the PAIRINFO parameter to suppress the display of copy pair information. By doing so, you can acquire information about copy groups only, thereby saving spool space.

Output example

When PAIRINFO is ON

Input parameters

```
PREFIX        USERID
DAD           LOCAL
GROUP         URGRP
PAIRINFO      ON
```

Output example

```
PREFIX        USERID
DAD           LOCAL

GROUP         URGRP
DESCRIPTION   UR copy group
PRIDAD        LOCAL
SECDAD        REMOTE
PRISCHSET     0
SECSCHSET     0

COPYTYPE      UR
PROTECTMODE   PROTECT
CTTIMEMODE    ASIS
ERRORLEVEL    GROUP
```

```
MIRRORID      1

EXCTG FWD ID(01) SN(11111) MODEL(VSP5100)
EXCTG REV DISABLE

     --- PRI -- --- SEC --
GRP# SN    CTID SN    CTID PathID  Pair
   1 11111   01 10057   01     00     4

GRP# PAIR# P/S DEVN SN    SSID CU CCA VOLSER       CYLS
   1     1 PRI ---- 11111 5120 20 11  ------
   1     1 SEC ---- 22222 5720 20 11  ------
   1     2 PRI 1602 11111 5120 20 02  VL1602
   1     2 SEC 1602 22222 5720 20 02  VL1602
```

When PAIRINFO is OFF

Input parameters

```
PREFIX        USERID
DAD           LOCAL
GROUP         URGRP
PAIRINFO      OFF
```

Output example

```
PREFIX        USERID
DAD           LOCAL

GROUP         URGRP
DESCRIPTION   UR copy group
PRIDAD        LOCAL
SECDAD        REMOTE
PRISCHSET     0
SECSCHSET     0

COPYTYPE      UR
COPYPACE      NORMAL
PROTECTMODE   PROTECT
CTTIMEMODE    ASIS
ERRORLEVEL    GROUP
MIRRORID      1

EXCTG FWD ID(01) SN(11111) MODEL(VSP5100)
EXCTG REV DISABLE

     --- PRI -- --- SEC --
GRP# SN    CTID SN    CTID PathID  Pair
   1 11111   01 10057   01     00     4
```

Return codes

The following table lists and describes the return codes when the `YKDSPGRP` command ends.

Table 2-31 YKDSPGRP command return code list

Return code	Meaning
-3	The command was executed in a non-TSO environment.

Return code	Meaning
0	The command terminated normally.
4	Unknown XML attribute(s) or element(s) were encountered in the configuration file.
36	The configuration file is invalid.
40	• OPEN, input, or output could not be performed for the parameter dataset. • An error occurred while a REXX variable was being written. • OPEN or input could not be performed for the configuration file.
48	There is an error in the record specified for the parameter dataset.

YKDSPRMT

Format

```
YKDSPRMT
[Δ1DD(DD-name-of-the-CLI-parameter-dataset)]
```

Function

This command is a REXX exec that requires the input parameter dataset to be allocated to a DD.

This command outputs all routes and command devices in the route list definition files specified by the input parameters. However, if YES is specified for the STATUS parameter, the command device statuses of all routes that originate from the specified DAD are output.

The execution results are output to SYSTSPRT.

Parameters

DD(*DD-name-of-the-CLI-parameter-dataset*) ~ <symbolic name><<CLIPARMS>>

Specify the DD name of the CLI parameter dataset.

Parameters of the CLI parameter dataset

Format

```
[PREFIXΔ1prefix]
[DADΔ1DADID]
[ROUTEIDΔ1route-list-ID]
```

[FORMAT Δ1 {TEXT|PARM}]

[STATUS Δ1 {YES|NO}]

Parameters

PREFIX *prefix* ~ <PREFIX string of 16 or fewer characters>

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

DAD *DADID* ~ <DAD string>

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

ROUTEID *route-list-ID* ~ <ROUTE string of 8 or fewer characters>

This is a common parameter included in the default parameter dataset. For this command, specify the route list ID of the route list definition file that you want to output.

FORMAT {TEXT|PARM}

Specify the output format. If this parameter is omitted, TEXT is assumed.

TEXT

Outputs information in text format (see Output example on page 2-68).

PARM

Outputs information in CLI parameter format for the YKDEFRMT command. If this format is specified, the STATUS parameter is ignored.

STATUS {YES|NO}

Specify whether to acquire the command device status. This parameter is valid only when the FORMAT parameter is set to TEXT. If is parameter is omitted, the default value YES is assumed.

YES

From the specified route list definition file, outputs the command device statuses of all routes that originate from the DAD specified for the DAD parameter.

NO

Outputs the command devices of all routes that are in the specified route list definition file.

Return codes

The following table lists and describes the return codes when the YKDSPRMT command ends.

Table 2-32 YKDSPRMT command return code list

Return code	Meaning
-3	• The command was executed in a non-TSO environment. • The module cannot be loaded.
0	The command terminated normally.
4	Unknown XML attribute(s) or element(s) were encountered in the configuration file.
32	An I/O error occurred.
36	The configuration file is invalid.
40	• `OPEN`, input, or output could not be performed for the parameter dataset. • An error occurred while a REXX variable was being written. • `OPEN` or input could not be performed for the configuration file.
48	There is an error in the record specified for the parameter dataset.
128	The user does not have permission to executed the command.

Output example

The following is an example of the output in text format.

When STATUS is NO

```
PREFIX    USERID.PREFIX
ROUTEID   ROUTEID

ROUTE                     CDEV
INDEX      APID LABEL     STATUS DEVN  SN    SSID CU CCA DAD
1.1.CDEV.1 0001 -------- N/A    01001 11111 1111 11 01  LOCAL
1.2.CDEV.1 0001 -------- N/A    ***** 22222 2211 11 01  NONGEN
1.3.CDEV.1 0001 -------- N/A    ***** 33333 3311 11 01  NONGEN
1.1.CDEV.2 0002 -------- N/A    02001 11111 1111 11 02  LOCAL2
1.2.CDEV.2 0002 -------- N/A    ***** 22222 2211 11 02  NONGEN
1.3.CDEV.2 0002 -------- N/A    ***** 33333 3311 11 02  NONGEN
```

When STATUS is YES

```
PREFIX    USERID.PREFIX
DAD       LOCAL
ROUTEID   ROUTEID

ROUTE                     CDEV
INDEX      APID LABEL     STATUS DEVN  SN    SSID CU CCA DAD
1.1.CDEV.1 0001 -------- OK     01001 11111 1111 11 01  LOCAL
1.2.CDEV.1 0001 -------- OK     ***** 22222 2211 11 01  NONGEN
1.3.CDEV.1 0001 -------- NG     ***** 33333 3311 11 01  NONGEN
```

For details about the `ROUTE INDEX`, see Route list structure on page 3-40.

YKENV command

Format

```
YKENV
```

Function

This is a TSO/E command called from REXX scripts.

This command outputs Business Continuity Manager environment variables to the TSO/E terminal. The two types of information that are output are summary information and detailed information.

Return codes

The following table lists and describes the return codes of the `YKENV` command.

Table 2-33 YKENV command return code list

Return code	Meaning
`0`	The command terminated normally.
`-3`	A module could not be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
`-1`	An interruption occurred during execution.

Output items

The table below lists and describes the items that are output during execution of the `YKENV` command in the order they are output.

Table 2-34 Items output by the YKENV command

Output item	Description
`Hitachi Business Continuity Manager`	Name of the program product
`BC Manager environment variables (`*v.r.m-nn*`(`*zz*`))`	Business Continuity Manager environment variables are output below this line. *v.r.m-nn*(*zz*) indicates the version number and build number.
`Host ID:`	Host ID
`License info DSN prefix:`	Prefix of the license information dataset.
`BCM log output method:`	BCM log output method. • `LOGR`: The system logger service is used to output the BCM log. • `SAM`: The BCM log is output to a SAM file.

Output item	Description
CLI log output settings:	CLI command-execution log output settings. • YES: The CLI command-execution log is output to SYSLOG. • CONSOLE: The CLI command-execution log is output to the console. • NO: The CLI command-execution log is not output.
YKCMDIF =	Value of the Business Continuity Manager environment variable YKCMDIF, which was set by the YKSETENV command. If YKCMDIF is not set, N/A is displayed.
&YKCMDIF =	Value of the system symbol &YKCMDIF. If &YKCMDIF is not set, N/A is displayed.
YKLCNSE =	Value of the Business Continuity Manager environment variable YKLCNSE, which was set by the YKSETENV command. If YKLCNSE is not set, N/A is displayed.
&YKLCNSE =	Value of the system symbol &YKLCNSE. If &YKLCNSE is not set, N/A is displayed.
YKLCNS2 =	Value of the Business Continuity Manager environment variable YKLCNS2, which was set by the YKSETENV command. If YKLCNS2 is not set, N/A is displayed.
&YKLCNS2 =	Value of the system symbol &YKLCNS2. If &YKLCNS2 is not set, N/A is displayed.
LOGPUT =	Value of the Business Continuity Manager environment variable LOGPUT, which was set by the YKSETENV command. If LOGPUT is not set, N/A is displayed.
&YKLOGPT =	Value of the system symbol &YKLOGPT. If &YKLOGPT is not set, N/A is displayed.
SYSLOG =	Value of the Business Continuity Manager environment variable SYSLOG, which was set by the YKSETENV command. If SYSLOG is not set, N/A is displayed.
&YKSYSLG =	Value of the system symbol &YKSYSLG. If &YKSYSLG is not set, N/A is displayed.

Output example

The following is an output example of the YKENV command:

```
READY
YKENV

Hitachi Business Continuity Manager
BC Manager environment variables (v.r.m-nn(zz))
Host ID: 00
License info DSN prefix: HITACHI
BCM log output method: LOGR
CLI log output settings: NO
```

```
 YKCMDIF = 01        (&YKCMDIF = "00"      )
 YKLCNSE = HTC1      (&YKLCNSE = N/A       )
 YKLCNS2 = BCM       (&YKLCNS2 = N/A       )
 LOGPUT  = SAM       (&YKLOGPT = "LOGR"    )
 SYSLOG  = NO        (&YKSYSLG = "YES"     )
 YKZ371I YKENV command return code=0.
```

YKERCODE command

Format

YKERCODE

Δ_1*error-code*

Function

This is a TSO/E command.

This command displays the details of a specified error code on the TSO/E terminal.

The command displays the following information:

- `Error details:`*details-of-error*
  Displays the error details.
- `Type of error:`*cause-of-error*
  Displays the cause of the error. Possible choices are: `SI`, `TC`, `UR`, `CMD` (command device), `PATH` (logical path), or `Others` (other).

Parameters

error-code ~ <4 hexadecimal characters>

Specify the storage system sense byte information (error code) that is included in the message displayed by Business Continuity Manager. For details on error codes, see the section that describes storage system sense byte information in the manual *Hitachi Storage Management Software for Mainframe Messages*.

Example

The following shows an example of executing the `YKERCODE` command.

```
 READY
YKERCODE 6A13
 Error details:
    The command could not be executed because a remote command was executed
    while the command device was not defined.

 Type of error:
    Others.
```

Return codes

The following table lists and describes the return codes of the `YKERCODE` command.

Table 2-35 YKERCODE command return code list

Return code	Meaning
0	The command completed normally.
8	No description of the specified error code was found.
16	Command execution terminated because of an invalid parameter.
64	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.

YKEWAIT command

Applies to ShadowImage, TrueCopy, TrueCopy with the HyperSwap attribute, and Universal Replicator.

Format

```
YKEWAIT
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
Δ1GOTO({DUPLEX|SUSPEND|SIMPLEX|SUSPVS|HOLD|SWAPPING|SWAP2SUS})
Δ1TIMEOUT(timeout-value)
[Δ1NOINVALIDCHECK]
[Δ1DEVN(p-vol-device-number,s-vol-device-number)|ORDER(stem-name-3)]
[Δ1TO({PRIMARY|SECONDARY})]
[Δ1VOLUNIT]
[Δ1UNTIL(number-of-copy-pairs-in-transition)]
```

Function

This command:

- Is a TSO/E command called from REXX scripts.
- Monitors the volume status transition of copy pairs for the specified copy group and waits for a certain specified status.
- Works when the storage system has the corresponding function.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the copy group structure that stores information about the copy group to be monitored. Specify the same character string as the one specified in the STEM parameter of the YKLOAD command that loaded the corresponding copy group. The last character must be a period (.).

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the MSG parameter is called.

GOTO({DUPLEX|SUSPEND|SIMPLEX|SUSPVS|HOLD|SWAPPING|SWAP2SUS})

Specify the status of the copy group to be monitored. When all the copy pairs in the group change to the specified status, the YKEWAIT command terminates successfully.

DUPLEX

The command waits until all the copy pairs in the group reach the DUPLEX status. However, if the status of any copy pair changes to the SIMPLEX, SUSPCU, SUSPER, TRANS, SUSPVS, HOLDER, NODELTA, CONSLOST, or INVALID status, the YKEWAIT command terminates abnormally with return code 8.

When the command waits for copy pairs in the copy group container with EXCTG ID to reach the DUPLEX status, it first waits for all journal groups in the copy group container with EXCTG ID to be registered in EXCTG. If an error is detected during EXCTG registration, the YKZ297E message is output and the command terminates abnormally with return code 44.

SUSPEND

The command waits until all the copy pairs in the group reach the SUSPOP or SWAPPING status. However, if the status of any copy pair changes to the SIMPLEX, SUSPER, SUSPCU, HOLD, HOLDER, HOLDTRNS, NODELTA, CONSLOST, or INVALID status, the YKEWAIT command terminates abnormally with return code 8.

SIMPLEX

The command waits until all the copy pairs in the group reach the SIMPLEX status. However, if the status of any copy pair changes to the SUSPER, SUSPCU, HOLDER, CONSLOST, or INVALID status, the YKEWAIT command terminates abnormally with return code 8.

SUSPVS

The command waits until all copy pairs in the group reach the SUSPOP or SUSPVS status. However, if the status of any copy pair changes to the SUSPER, SIMPLEX, SUSPCU, HOLD, HOLDER, HOLDTRNS, NODELTA, CONSLOST, or INVALID status, the YKEWAIT command terminates abnormally with return code 8.

HOLD

Applies to Universal Replicator.

The command waits for all copy pairs in the group to reach the HOLD status. However, if any copy pair takes the SIMPLEX, SUSPER, SUSPCU, HOLDER, NODELTA, or INVALID status, the YKEWAIT command terminates abnormally with return code 8. In rare cases, delta resync pairs might stay in HOLDTRNS status. If this occurs, the YKEWAIT command does not terminate until the time specified by TIMEOUT parameter elapses.

In the Copy Group Status Summary panel, the number of copy pairs in the HOLD status is included in the displayed number of pairs in the SUSPOP status. In the Copy Group Storage System Summary panel, the number of pairs in the HOLD status is included in the displayed number of pairs in the SUSPOP status.

SWAPPING

Applies to TrueCopy, TrueCopy with the HyperSwap attribute, and Universal Replicator.

The command waits until all copy pairs in the group reach the SWAPPING status. However, if the status of any copy pair changes to the SIMPLEX, HOLD, HOLDER, HOLDTRNS, NODELTA, CONSLOST, or INVALID status, the YKEWAIT command terminates abnormally with return code 8.

SWAP2SUS

Applies to TrueCopy, and Universal Replicator.

The command waits until all copy pairs in the group reach the SUSPOP, SUSPER, or SUSPCU status. However, if the status of any copy pair changes to the SIMPLEX, HOLD, HOLDER, HOLDTRNS, NODELTA, CONSLOST, or INVALID status, the YKEWAIT command terminates abnormally with return code 8.

TIMEOUT(*timeout-value*) ~ <numeric characters> ((0-9999))

Specify a timeout value in minutes. If the specified duration has elapsed before the status specified by the GOTO parameter is attained, the YKEWAIT command checks the status of the copy group at that moment. If the status is the same as the one specified in the GOTO parameter, the command terminates normally (return code = 0). If not, it terminates abnormally with the return code 4.

If 0 is specified in TIMEOUT parameter, it looks at the status of the copy group immediately, and then returns as described as above.

For copy group containers with EXCTG IDs, if this time value elapses before all journal groups are registered in EXCTG, the YKZ298W message is output and the YKEWAIT command terminates abnormally with return code 4. If the

YKZ298W message is output, the *REXX* variable is disabled (the same state as before the YKEWAIT command was executed).

NOINVALIDCHECK

Processing continues even when the status changes to anything other than the status specified by the GOTO parameter (invalid statuses). If this parameter is specified, and the status does not change to that specified in the GOTO parameter, the command processing will continue until the timeout time specified in the TIMEOUT parameter is reached.

The invalid statuses below differ depending on the value specified in the GOTO parameter. The following table shows an invalid status for each value specifiable in the GOTO parameter.

Table 2-36 Invalid status for each value specifiable in the GOTO parameter

Value of the GOTO parameter	Invalid statuses
DUPLEX	SIMPLEX, SUSPCU, SUSPER, TRANS, SUSPVS, HOLDER, NODELTA, CONSLOST, or INVALID
SUSPEND	SIMPLEX, SUSPER, SUSPCU, HOLD, HOLDER, HOLDTRNS, NODELTA, CONSLOST, or INVALID
SIMPLEX	SUSPER, SUSPCU, HOLDER, CONSLOST, or INVALID
SUSPVS	SUSPER, SIMPLEX, SUSPCU, HOLD, HOLDER, HOLDTRNS, NODELTA, CONSLOST, or INVALID
HOLD	SIMPLEX, SUSPER, SUSPCU, HOLDER, NODELTA, or INVALID
SWAPPING	SIMPLEX, HOLD, HOLDER, HOLDTRNS, NODELTA, CONSLOST, or INVALID
SWAP2SUS	SIMPLEX, HOLD, HOLDER, HOLDTRNS, NODELTA, CONSLOST, or INVALID

When the command waits for copy pairs in the copy group container with EXCTG ID to reach DUPLEX status, it first waits for all journal groups in the copy group container with EXCTG ID to be registered in EXCTG. If an error is detected during EXCTG registration, the YKZ297E message is output and the command terminates abnormally with return code 44.

When the command monitors the status of a copy pair in a ShadowImage copy group to which the UR ATTIME suspend time has been set, the check operation differs depending on whether the NOINVALIDCHECK parameter is specified:

- If the NOINVALIDCHECK parameter is not specified

  The status of the Universal Replicator copy pair at the time of ShadowImage copy pair suspension will be checked. If an error is detected, the YKZ407E message, YKZ408E message, or YKZ409E message is output and the command terminates abnormally with return code 24.

- If the `NOINVALIDCHECK` parameter is specified

  The status of the Universal Replicator copy pair at the time of ShadowImage copy pair suspension will not be checked.

DEVN (*p-vol-device-number*, *s-vol-device-number*) ~ <4-digit hexadecimal number, 4-digit hexadecimal number>

Specify the device number of the copy pair (P-VOL and S-VOL) to operate.

Note that, for copy group containers with EXCTG IDs, the command checks the EXCTG registration information for all copy group containers.

After specifying the copy pair to operate, to view REXX variables (such as `SimplexCt`) shown in information for copy pairs that are not operation targets, execute the `YKQUERY` command or `YKEWAIT` command for all copy pairs.

ORDER (*stem-name-3*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the ORDER structure. If you specify this parameter, you can monitor only the copy pairs specified in the ORDER structure. The last character must be a period (`.`). For copy group containers with EXCTG IDs, the command does not check the EXCTG registration information.

After specifying the copy pair to operate, to view REXX variables (such as `SimplexCt`) shown in information for copy pairs that are not operation targets, execute the `YKQUERY` command or `YKEWAIT` command for all copy pairs.

TO({PRIMARY|SECONDARY})

Applies to TrueCopy, TrueCopy with the HyperSwap attribute, and Universal Replicator.

Specify this parameter to monitor copy groups by monitoring the status of either P-VOLs or S-VOLs.

When the `TO` parameter is specified, the copy group container is not checked for EXCTG registration information.

`PRIMARY`

Monitors the status of P-VOL during copy group definition.

`SECONDARY`

Monitors the status of S-VOL during copy group definition.

VOLUNIT

Usually, information is obtained for each control unit, but when this parameter is specified, information is obtained for each volume.

UNTIL(*number-of-copy-pairs-in-transition*) ~ <1- to 5-digit numeric characters><<0>>

Specify the number of copy pairs that are undergoing transition to the specified status. If the number of copy pairs that are in transition becomes equal to or lower than the value specified for this parameter during monitoring of copy pair status transition, the monitoring of status transitions finishes. If the NOINVALIDCHECK parameter is specified, the invalid statuses indicated in Table 2-36 Invalid status for each value specifiable in the GOTO parameter on page 2-75 are considered as copy pairs that are in transition.

Return codes

The following table lists and describes the return codes of the YKEWAIT command.

Table 2-37 YKEWAIT command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
4	The timeout interval expired before the group status changed to the requested group status. For copy group containers with EXCTG IDs, a timeout occurred before all journal groups were registered in EXCTG.#
8	Unexpected transition of group status.
24	• An error occurred when the suspend processing was performed by using the UR ATTIME Suspend function. • The status of the Universal Replicator copy pair was invalid when the suspend processing was performed by using the UR ATTIME Suspend function. • The suspend processing has started because the timeout period had elapsed when the UR ATTIME Suspend function was executed.
32	• One or more I/O error was encountered. • A change in an I/O configuration definition was detected.
36	• An invalid or unknown element was found in the configuration. • An inconsistency between a copy group definition and an actual copy group was detected.
40	An error occurred while a REXX variable was being written.
44	Termination due to processing errors.
48	Termination due to invalid parameters. For example, as in the following case: • When the copy pair corresponding to the device number specified with the DEVN parameter is not found.

Return code	Meaning
128	The command terminated abnormally. The user does not have permission to execute this command.

#: If a time-out has taken place, use the YKQUERY command to check the status of the copy pair. If there is a copy pair where a transition has not taken place, the S-VOL of the copy pair might be ONLINE. Place it OFFLINE and re-execute. In addition, for copy group containers with EXCTG IDs, check if the journal group has been registered in EXCTG.

YKEXPORT command

Applies to ShadowImage, TrueCopy, TrueCopy with the HyperSwap attribute, and Universal Replicator.

Format

```
YKEXPORT
Δ1PREFIX(prefix)
Δ1GROUP(copy-group-ID)
```

Function

This is a TSO/E command.

This command reads a specified copy group definition file and creates the following CSV files based on the copy group information:

- Pair information CSV file
- EXCTG information CSV file
- CTG information CSV file

Before you execute this command, allocate datasets for the CSV files under the following DD names and catalog the files:

- Pair information CSV file: OUTPAIR
- EXCTG information CSV file: OUTEXCTG
- CTG information CSV file: OUTCTG

For details about CSV files, see Chapter 4, CSV files used by the copy group definition file generation function on page 4-1.

Parameters

PREFIX(*prefix*) ~ <PREFIX string>

Specify the prefix of the copy group definition file.

GROUP (*copy-group-ID*) ~ <GROUP string>

Specify the copy group ID of the copy group.

Notes

- The execution of this command does not check if the configuration of the copy groups specified in the copy group definition file is supported. Therefore, an error could result when you specify, by using the YKIMPORT command, a CSV file created by this command. If an error occurs, check if the configuration of the copy groups in the CSV file is supported. For details about the YKIMPORT command, see YKIMPORT command on page 2-91.
- The pair information CSV file is created even if an error occurs during creation of the EXCTG information CSV file.
- The pair information CSV file and EXCTG information CSV file (only for 4x4 configurations) are created even if an error occurs during creation of the CTG information CSV file.

Return codes

The following table lists and describes the return codes of the YKEXPORT command.

Table 2-38 YKEXPORT command return code list

Return code	Meaning
0	The command completed normally. Contents of the copy group definition file were output to the CSV file.
4	No copy pairs were defined in the specified copy group. No data was output to the CSV file.
32	The input file was invalid.
40	An error occurred during file I/O processing.
48	Termination due to invalid parameters.
64	An error occurred during REXX processing.

YKFCSTAT command

Applies to TrueCopy, TrueCopy with the HyperSwap attribute, and Universal Replicator.

Format

YKFCSTAT

Δ_1STEM(*stem-name-1*)

Δ_1MSG(*stem-name-2*)

Δ_1DEVN(*device-number*)

Function

This is a TSO/E command called from REXX scripts.

This command acquires the FlashCopy® information related to the specified volume from the storage system, and stores the information into the FlashCopy® information structure that was specified by the `STEM` parameter.

If the specified volume is not found, or an I/O error occurred and the storage system information cannot be acquired, this command creates an error message in the command return configuration structure, and then returns a return code other than `0`.

This command can be used for storage systems on which FlashCopy® Mirror Version 2 is installed.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the FlashCopy® information structure used to store the FlashCopy® information. The last character must be a period (`.`).

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (`.`).

The message structure is initialized when the CLI command with the same name as the `MSG` parameter is called.

DEVN(*device-number*) ~ <4- or 5- digit hexadecimal number>((00000-3FFFF))

Specify a device number for the volume from which the FlashCopy® information will be acquired.

Usually, you specify the P-VOL of TrueCopy or Universal Replicator, which is the target volume of FlashCopy®.

When multiple subchannel sets are used, specify this parameter as a 5-digit number by adding the 1-digit subchannel set ID before the device number. If the subchannel set ID is omitted, `0` is assumed.

This parameter can be specified for locally connected devices only. It cannot be specified for Non Gen'ed volumes.

Return codes

The following table lists and describes the return codes of the `YKFCSTAT` command.

Table 2-39 YKFCSTAT command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
32	• One or more I/O error was encountered. • A change in an I/O configuration definition was detected.
40	An error occurred while a REXX variable was being written.
44	Termination due to processing errors.
48	Termination due to invalid parameters.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKFENCE command

Applies to ShadowImage, TrueCopy, TrueCopy with the HyperSwap attribute, and Universal Replicator.

Format

```
YKFENCE
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
[Δ1{SOFTFENCE|SOFTUNFENCE|QUERY}]
[Δ1TO({PRIMARY|SECONDARY})]
```

Function

This command is a TSO/E command called from REXX scripts.

Sets the soft fence for, or resets the soft fence of, a volume within the specified copy group. In addition, this command acquires the soft fence status and the SPID fence status.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specifies the prefix of the copy group structure that contains information related to setting and resetting the soft fence, or to copy groups for which the fence status is to be acquired. Specify the same character string as you

specified for the STEM parameter of the YKLOAD command that was used to load the copy group. The last character must be a period (.).

MSG (*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specifies a prefix for the name of the message structure used to store messages generated by this command. The last character must be a period (.).

The message structure is reinitialized whenever a CLI command is called with the same name specified for the MSG parameter.

{SOFTFENCE|SOFTUNFENCE|QUERY}

Specifies the operation for the volume. The default value is QUERY.

SOFTFENCE
: Sets the soft fence for a volume.

SOFTUNFENCE
: Resets the soft fence of a volume.

QUERY
: Acquires a volume's soft fence status and the SPID fence status, and sets it to the copy group structure.

TO({PRIMARY|SECONDARY})

Specifies the volume that is to be the target of the fence operation. The default value is PRIMARY.

PRIMARY
: Targets the P-VOL at the time the copy pair was defined.

SECONDARY
: Targets the S-VOL at the time the copy pair was defined.

Notes

- The YKFENCE command cannot be executed on a Non Gen'ed volume or on a remote storage system volume.
- The YKFENCE command is directly issued to the volume that is to be the target of the fence operation even if the command is set to be issued via a command device (YKLOAD with VIACDEV specified).

Return codes

Table 2-40 YKFENCE command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows:

Return code	Meaning
	• The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command terminated normally.
4	Acquisition of the fence status was skipped for a volume, because the volume does not exist in the storage system.
32	The fence operation could not be performed on one or more volumes because the ANTRQST macro detected an error.
36	An invalid or unknown element was found in the configuration.
40	An error occurred while a REXX variable was being written.
44	The command terminated due to processing errors. For example, this includes the following case: • A GETMAIN error has occurred.
48	The command terminated due to invalid parameters. For example, as in the following case: • A Non Gen'ed volume or a remote storage system volume existed.

YKFREEZE command

Applies to TrueCopy.

Format

```
YKFREEZE
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
[Δ1TIMEOUT(timeout-value)]
```

Function

This command:

- Is a TSO/E command called from REXX scripts.
- Is executable for a copy group specified by the consistency group ID.
- Freezes the specified copy group, changes it to the SCP status and suspends update I/O to the P-VOL.
- Works when the storage system has the corresponding function.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the copy group structure that stores information about the copy group whose status you want to freeze (place in SCP status). Specify the same character string as the one specified in the STEM parameter of the YKLOAD command that loaded the corresponding copy group. The last character must be a period (.).

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the MSG parameter is called.

TIMEOUT(*timeout-value*) ~ <numeric characters> ((100-5000)) <<1000>>

Specify the timeout value in milliseconds. When the time specified with this value has elapsed after executing the YKFREEZE command, the system automatically resets the SCP status.

You can specify a value of up to 5000 milliseconds in increments of 100 milliseconds. If you omit this parameter, 1000 milliseconds is assumed.

Notes

If you are using the YKFREEZE command, do not include system volumes in a copy group whose system volumes are used for controlling applications such as Business Continuity Manager or an OS.

Return codes

The following table lists and describes the return codes of the YKFREEZE command.

Table 2-41 YKFREEZE command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
32	• One or more I/O error was encountered.

Return code	Meaning
	• A change in an I/O configuration definition was detected.
36	Invalid or unknown elements are found in the structure.
40	An error occurred while a REXX variable was being written.
44	Termination due to processing errors.
48	Termination due to invalid parameters.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKGETHDA command

Format

```
YKGETHDA
Δ1STEM(stem-name-1)
Δ1PREFIX(prefix)
Δ1SN(storage-system-serial-number)
Δ1DAD(DADID)
Δ1MSG(stem-name-2)
```

Function

This command is a REXX subroutine.

This command loads the disk configuration definition file and then stores it in the Host-Discovered Array structure and Host-Discovered Array index structure.

Regardless of the prefix specified in the `STEM` parameter, the Host-Discovered Array Index structure is created with the prefix `HCC.HDA`.

Parameters

`STEM(`*stem-name-1*`)` ~ <REXX prefix of 64 or fewer characters>

Specify a prefix to be used for the Host-Discovered Array structure that stores information when a disk configuration definition file is loaded. The last character must be a period (`.`).

`PREFIX(`*prefix*`)` ~ <PREFIX string>

Specify the prefix of the disk configuration definition file.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

SN (*storage-system-serial-number*) ~ <5 alphanumeric characters>

Specify the serial number of the storage system.

DAD (*DADID*) ~ <DAD string>

Specify the device address domain ID (local device address domain ID) of the current host.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

MSG (*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the MSG parameter is called.

Return codes

The following table lists and describes the return codes of the YKGETHDA command.

Table 2-42 YKGETHDA command return code list

Return code	Meaning
0	The command completed normally.
4	Unknown XML attribute(s) or element(s) encountered in input file.
36	Termination due to invalid XML structure encountered in input file, or system symbols are not defined correctly. Termination due to an error during license processing.
40	An error occurred when a file was being read.
44	Termination due to invalid processing.
48	Termination due to invalid parameters.
52	Termination due to improper invocation method.

YKH2B command

Applies to TrueCopy with the HyperSwap attribute.

Format

```
YKH2B
△1PREFIX(prefix)
```

```
Δ1DEVN(device-number-1,device-number-2)
Δ1DAD(dad-id1[,dad-id2])
Δ1CGNAME(name-of-TrueCopy-copy-group-with-HyperSwap-attribute)
[Δ1SSN(storage-system-serial-number)]
[Δ1HS({CHECK|NOCHECK})]
[Δ1CFGUPDTE({INPLACE|REALLOC})]
[Δ1STORCLAS(storage-class)]
[Δ1VOLUME(volser)]
[Δ1UNIT(device-type)]
```

Function

This is a TSO/E command.

This command obtains information about the P-VOLs of PPRC copy pairs within the specified range. It then creates a copy group definition file by defining the P-VOLs and the corresponding S-VOLs as TrueCopy copy pairs that have the HyperSwap attribute of Business Continuity Manager.

A single copy group definition file is created for all defined copy pairs. However, when multiple subchannel sets are used, a copy group definition file is created for each subchannel set ID of the S-VOLs of the defined copy pairs.

Before executing this command, create a disk configuration definition file by scanning the P-VOLs and S-VOLs to be defined as TrueCopy copy pairs that have the HyperSwap attribute.

Parameters

PREFIX (*prefix*) ~ <PREFIX string>

Specify the prefix of a disk configuration definition file that has already been created by Business Continuity Manager and of the copy group definition file to be created.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

DEVN (*device-number-1*, *device-number-2*) ~ <4-digit hexadecimal number>

Specify the range of P-VOLs of the PPRC copy pairs by using the device numbers. For *device-number-1*, specify the starting device number for the scan range. For *device-number-2*, specify the ending device number for the scan range. For example, if `7000` and `7300` are specified for *device-number-1* and *device-number-2*, respectively, copy pairs are scanned whose volumes' device numbers are in the range from `7000` to `7300`.

If *device-number-2* is smaller than *device-number-1*, *device-number-2* is treated as the starting device number of the scan range and *device-number-1* is treated as the ending device number of the scan range.

DAD(*dad-id1*[,*dad-id2*]) ~ <DAD string>

Specify the device address domain ID of the primary storage system for *dad-id1*, and the device address domain ID of the secondary storage system for *dad-id2*. If you omit *dad-id2*, the value specified for *dad-id1* is assumed to be the device address domain ID of the secondary storage system, and all S-VOLs of the detected TrueCopy copy pairs are treated as Gen'ed volumes.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

CGNAME(*name-of-TrueCopy-copy-group-with-HyperSwap-attribute*) ~ <string of 8 or fewer characters>

Specify the name of a TrueCopy copy group with the HyperSwap attribute.

When multiple subchannel sets are used, if any S-VOLs exist whose subchannel set ID is not 0, a 2-digit serial number starting with `00` is added to each specified copy group name in ascending order. For this reason, if 7 or more characters are specified for this parameter, the 7th and subsequent characters are truncated to ensure that the copy group name consists of 8 characters.

SSN(*storage-system-serial-number*[,*storage-system-serial-number...*]) ~ <5 alphanumeric characters>

Specify the serial number of one or more secondary storage systems. If you specify this parameter, only the PPRC copy pairs in the specified secondary storage system are defined as a TrueCopy copy group with the HyperSwap attribute. If you omit this parameter, the PPRC copy pairs in all detected secondary storage systems are defined as a TrueCopy copy group with the HyperSwap attribute. You can specify up to 32 serial numbers.

HS({CHECK|NOCHECK})

Specify whether to check if HyperSwap is enabled for the detected PPRC copy pairs.

`CHECK`

Acquires the UCB information (`UCBHSWAP`) of the P-VOLs of detected PPRC copy pairs and checks whether HyperSwap is enabled. Only those PPRC copy pairs for which `UCBHSWAP` is set to `ON` are defined as a TrueCopy copy group with the HyperSwap attribute.

`NOCHECK`

Does not check whether HyperSwap is enabled for the detected PPRC copy pairs. Instead, all detected copy pairs are defined as a TrueCopy copy group with the HyperSwap attribute.

CFGUPDTE({INPLACE|REALLOC})

Specify the method for allocating the copy group definition file. The default value is INPLACE.

INPLACE

Creates the copy group definition file without creating a temporary file. If a copy group definition file already exists, the file is overwritten.

REALLOC

Creates a temporary file and then creates a copy group definition file. If a copy group definition file already exists, a new file is allocated.

STORCLAS(*storage-class*) ~ <storage class string>

Specify this parameter if you want to assign the copy group definition file to a specific storage class. If the file is going to be overwritten, this parameter will be disregarded.

VOLUME(*volser*) ~ <volume serial number string>

Specify this parameter if you want to assign the copy group definition file to a specific volume. Only one volume can be specified. If the file is going to be overwritten, this parameter will be disregarded.

UNIT(*device-type*) ~ <device type string>

Specify this parameter if you want to assign the copy group definition file to a specific device type. If the file is going to be overwritten, this parameter will be disregarded.

Notes

- If a copy group definition file with the same name as the name specified in the CGNAME parameter already exists, executing the YKH2B command overwrites the existing file with the newly created file. To retain the existing file, specify a unique name in the CGNAME parameter (one that is different from other existing copy group definition file names).
- When you specify NOCHECK for the HS parameter, for the scan range, include only PPRC TrueCopy copy pair volumes for which HyperSwap is enabled. If volumes of non-PPRC TrueCopy copy pairs or volumes of PPRC copy pairs for which HyperSwap is not enabled are included in the scan range, the copy pairs will be processed as PPRC copy pairs for which HyperSwap is enabled. They will also be defined together as a TrueCopy copy group with the HyperSwap attribute.
- Copy group definition files for copy types that the user does not have access permission are not created.
- The copy pair is defined even if the P-VOL or S-VOL of a PPRC copy pair does not exist in the disk configuration definition file. In this case, a warning message is output.

- When multiple subchannel sets are used, if the S-VOL corresponding to a P-VOL does not exist in the disk configuration definition file, `0` is assumed to be the subchannel set ID of the S-VOL. After scanning the S-VOL, if the subchannel set ID is other than 0, the created copy group definition file cannot be used. If this happens, delete the copy group definition file, and then execute the `YKH2B` command to create the file again.
- If multiple subchannel sets are used, the active subchannel set ID of the volumes with the device number to be specified must be 0. If the ID is not `0`, the `YKH2B` command terminates abnormally with the return code 8.
- In a 3DC Multi-Target (TCxTC) configuration, PPRC copy pairs whose P-VOL's UCBHSWAP is set to ON are assumed to be PPRC copy pairs for which HyperSwap is enabled, regardless of whether those pairs are targets of HyperSwap.
- Copy pairs in the `MTIR` state are not defined as a TrueCopy copy group with the HyperSwap attribute.

Return codes

The following table lists and describes the return codes of the `YKH2B` command.

Table 2-43 YKH2B command return code list

Return code	Meaning
`0`	The command completed normally. A copy group definition file was created.
`4`	• The command terminated normally. No copy pairs were detected within the specified device number range. • Although a copy group definition file was generated, undefined volume information or volume information for which the DEVN has not been set was detected in the disk configuration definition file at the site specified by the `DAD` parameter for a pair that is within the range specified by the `DEVN` parameter. • Although a copy group definition file was generated, a change was detected in an I/O configuration while the `YKH2B` command was being executed by omitting the `HS` parameter or by specifying `CHECK`. • Although a copy group definition file was generated, a storage system that does not support 2DC configurations with HyperSwap and Universal Replicator was detected.
`8`	An I/O error occurred in a volume within the scan range. A copy group definition file was created for the successfully detected volumes. The active subchannel set ID of the volumes with the specified device number is not 0.
`44`	Termination due to processing errors. No copy group definition file was created.
`48`	Termination due to invalid parameters.

Return code	Meaning
64	An error occurred during REXX processing.

YKIMPORT command

Applies to ShadowImage, TrueCopy, TrueCopy with the HyperSwap attribute, and Universal Replicator.

Format

```
YKIMPORT
△1PREFIX(prefix)
△1BASEGROUP(copy-group-ID)
△1NEWGROUP(copy-group-ID)
[△1CAPACITY({CHECK|NOCHECK})]
[△1CFGUPDTE({INPLACE|REALLOC})]
[△1STORCLAS(storage-class)]
[△1VOLUME(volser)]
[△1UNIT(device-type)]
[△1AUTOPAIR]
```

Function

This is a TSO/E command.

This command reads the following files and creates a copy group definition file:

- Pair information CSV file
- EXCTG information CSV file
- CTG information CSV file
- Disk configuration definition file
- Copy group definition file
  Copy group definition file that defines attributes of a copy group to be created

Before you execute this command, allocate datasets for the CSV files under the following DD names and catalog the files:

- Pair information CSV file: `INPAIR`
- EXCTG information CSV file: `INEXCTG`
- CTG information CSV file: `INCTG`

If this command ends with an error, the command outputs a message to `SYSTSPRT`.

For details about CSV files, see Chapter 4, CSV files used by the copy group definition file generation function on page 4-1.

Parameters

PREFIX(*prefix*) ~ <PREFIX string>

Specify the prefix of the copy group definition file.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

BASEGROUP(*copy-group-ID*) ~ <GROUP string>

Specify the copy group ID of the copy group that is to be used as the base.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

NEWGROUP(*copy-group-ID*) ~ <GROUP string>

Specify the copy group ID of the copy group that is to be created.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

A new copy group definition file is created under the name specified in this parameter. To update an existing copy group definition file, specify the same name in the BASEGROUP and NEWGROUP parameters.

CAPACITY({CHECK|NOCHECK})

Specify whether to check the capacities of the P-VOL and S-VOL for the newly defined copy pair. The default is CHECK.

CHECK
: Checks whether the capacities of the P-VOL and S-VOL of the defined copy pair match.

NOCHECK
: Does not check whether the capacities of the P-VOL and S-VOL of the defined copy pair match. Specify this parameter when defining a copy pair for migration whose P-VOL and S-VOL capacities are different.

CFGUPDTE({INPLACE|REALLOC})

Specify the method for allocating the copy group definition file. The default value is INPLACE.

INPLACE
: Creates the copy group definition file without creating a temporary file. If updating a copy group definition file that already exists, the file is overwritten.

`REALLOC`

Creates a temporary file and then creates a copy group definition file. If updating a copy group definition file that already exists, a new file is allocated.

`STORCLAS` (*storage-class*) ~ <storage class string>

Specify this parameter if you want to assign the configuration file to a specific storage class. If the file is going to be overwritten, this parameter will be disregarded.

`VOLUME` (*volser*) ~ <volume serial number string>

Specify this parameter if you want to assign the configuration file to a specific volume. Only one volume can be specified. If the file is going to be overwritten, this parameter will be disregarded.

`UNIT` (*device-type*) ~ <device type character string>

Specify this parameter if you want to assign the configuration file to a specific device type. If the file is going to be overwritten, this parameter will be disregarded.

`AUTOPAIR`

Specify this parameter to use the automatic pairing function.

When this parameter is specified, for the pairs for which S-VOL information is specified in the pair information CSV file, the specified volumes are defined as the S-VOLs of copy pairs.

Notes

If dummy device numbers are automatically assigned, the disk configuration definition file is updated.

Return codes

The following table lists and describes the return codes of the `YKIMPORT` command.

Table 2-44 YKIMPORT command return code list

Return code	Meaning
0	The command completed normally. A copy group definition file was created.
4	No copy pairs were defined in the specified CSV file. No data was output to the copy group definition file.
8	A copy group definition file was created, but a problem was detected.

Return code	Meaning
	Possible causes are as follows: • There was an inconsistency in the input information. • An attempt to check the capacities failed because the capacity of the P-VOL, S-VOL, or both volumes could not be acquired.
32	• The input file was invalid. • The specified volume is not included in the disk configuration definition file. • An element that can cause an error when a copy pair is created is included. • An error occurred while the configuration file was being read or written to.
40	An error occurred during file I/O processing.
48	Termination due to invalid parameters.
64	An error occurred during REXX processing.

YKINSCHK command

Format

```
YKINSCHK
```

Function

This command is a TSO/E command called from a REXX script.

This command verifies whether the following settings required during an installation and setup have been specified correctly. It then outputs a verification-result message and the setting information to the TSO/E panel.

- For users who use Business Continuity Manager, the READ permission has been granted for the profile used for referencing or for operations that is defined in the RACF FACILITY class.
- A user SVC is registered.
- A host ID is set.

Return codes

The following table lists and describes the return codes of the `YKINSCHK` command.

Table 2-45 YKINSCHK command return code list

Return code	Meaning
0	There are no problems in the settings.
8	There is a problem with the settings.

Return code	Meaning
32	A processing error occurred during command execution.
48	Termination due to invalid parameters.

Output items

The table shown below explains the items that are output when the YKINSCHK command is executed; in the order they are output.

Table 2-46 YKINSCHK command output items

Output item	Explanation
Security Settings	• OK The permission to use Business Continuity Manager has been set for the user. • FAULTY The permission to use Business Continuity Manager is not set for the user.
User SVC Routine	• OK There are no problems in the user SVC setting. • FAULTY There is a problem in the user SVC setting.
Host ID Settings	• OK There are no problems with the host ID settings. • FAULTY There is a problem with the host ID settings.
Facility Class Profiles Query	The name of the profile for referencing that is currently registered. If no profile name is set, N/A is output.
Facility Class Profiles Commands	The name of the profile for operations that is currently registered. If no profile name is set, N/A is output.
Directions	An explanation of the permission required to execute a CLI command for referencing or operations.
Version of user SVC for this program	The user SVC version, which can be used with the Business Continuity Manager instance that is running.
Current User SVC: SVC Number	The SVC number of the user SVC that is currently enabled. If no SVC number can be acquired, N/A is output.
Current User SVC: Version	The user SVC version that is currently enabled. If version information cannot be acquired, N/A is output.
Dynamic registered user SVC:	The SVC number of the user SVC that was registered dynamically by the YKALCSVC command.

Output item	Explanation
SVC Number	If no SVC number can be acquired, N/A is output.
Dynamic registered user SVC: Version	The version of the user SVC that was registered dynamically by the YKALCSVC command. If no version information can be acquired, N/A is output.
Static installed user SVC: SVC Number	The SVC number of the user SVC that was defined as an IEASVC*xx* parmlib member and registered statically. If no SVC number can be acquired, N/A is output.
Static installed user SVC: Version	The version of the user SVC that was defined as an IEASVC*xx* parmlib member and registered statically. If no version information can be acquired, N/A is output.
Directions	The explanation of the relationship between a dynamically or statically registered user SVC and the user SVC that will be enabled.
Current Host ID	The host ID that is currently enabled in the system. • If no host ID was defined by using the YKSETENV command or for the IEASYM*xx* parmlib member: 00 (default value) is output. • If the host ID cannot be acquired: N/A is output. • If the host ID is invalid because it is not a value from X'00' to X'1F': The value is output, and FAULTY is output for **Host ID Settings**.
Dynamically defined Host ID	The host ID that was defined dynamically by using the YKSETENV command. If the host ID cannot be acquired, N/A is output.
Statically defined Host ID	The host ID that was defined statically for the IEASYM*xx* parmlib member. If the host ID cannot be acquired, N/A is output. Even if the defined host ID is invalid because it is not a value from X'00' to X'1F', the value is output.
Directions	Descriptions of the host ID

Output example

The following is an output example of the YKINSCHK command:

```
READY
YKINSCHK

     Security Settings .........: OK
     User SVC Routine ..........: OK
     Host ID Settings ..........: OK

     Facility Class Profiles Query    : STGADMIN.YKA.BCM.YKQUERY
     Facility Class Profiles Commands : STGADMIN.YKA.BCM.COMMANDS

     Directions
       The current setup is listed above.
```

```
 An unregistered profile is listed as N/A.
  The RACF settings are necessary in order to use CLI commands.
 After a profile is defined in the RACF FACILITY class, a user can use
 CLI commands by being given the access rights of the profile.
  There are the following two kinds of profiles:
   - Facility Class Profiles Query
   - Facility Class Profiles Commands
  To give a user the permissions necessary to use all of the BCM commands:
   1. Make the RACF FACILITY class active.
   2. Define the STGADMIN.YKA.BCM.COMMANDS profile in the FACILITY class.
   3. Give the user the access rights of the profile.
  To give a user the permissions necessary to use some of the BCM commands
  (the reference commands):
   4. Make the RACF FACILITY class active.
   5. Define the STGADMIN.YKA.BCM.YKQUERY profile in the FACILITY class.
   6. Give the user the access rights of the profile.

Version of User SVC for this program .............: v.r.m-nn(zz) or later
Current User SVC            : SVC Number 200 Version v.r.m-nn(zz)
Dynamic registered User SVC : SVC Number 200 Version v.r.m-nn(zz)
Static installed User SVC   : SVC Number 251 Version v.r.m-nn(zz)

Directions
  The current users SVC routine registration number and version are listed
 above.
 User SVC numbers and versions that have not been acquired are listed as
 N/A.
  If a Dynamic registered User SVC exists, the Dynamic registered User SVC
 will become the Current User SVC.
 If a Dynamic registered User SVC does not exist and a Static installed
 User SVC exists, the Static installed User SVC will become the Current
 User SVC.
 If the Current User SVC is smaller than the Version of User SVC for this
 program, then the program will not run properly.

  If this is the case, use the YKALCSVC command to dynamically register
 the latest User SVC.
  The following is an example of registering a User SVC:
   +-------------------------------------------------------------------+
   : START YKALCSVC                                                    :
   +-------------------------------------------------------------------+

Note:
  A User SVC registered by using the YKALCSVC command will become invalid
 during a re-IPL.
 As a result, we recommend performing either of the following settings
 in order to prepare for the next re-IPL:
   - Add the YKALCSVC command to the COMMNDxx parmlib member, and then
    have the User SVC automatically re-registered during a re-IPL.
   - Define a User SVC in the IEASVCxx parmlib member, and then use the
    User SVC that was statically installed from the next IPL.

Current Host ID ...............: 00
Dynamically defined Host ID ...: N/A
Statically defined Host ID ....: 00

Directions
  The current host ID settings are listed above.
  Host IDs that could not be acquired are listed as N/A.
  When using the remote DKC control functionality, if you want to use
  Business Continuity Manager from multiple hosts (OSs) on the same site
  to share one command device within one storage system, specify the host
  IDs. If there is only one host (OS) on the site, or you do not want to
  share one command device among multiple hosts, you do not need to
  specify any host IDs.
  For host IDs, specify a unique hexadecimal two-digit number from 00
  through 1F for each OS. In an LPAR environment, specify a different
  number for each LPAR.
  Set host IDs by using the YKSETENV command before starting Business
```

```
      Continuity Manager. Alternatively, you can define the corresponding
      system symbols in the IEASYMxx parmlib member and then perform IPL on
      the system again to set values for the host ID.
      The examples below show how to specify a host ID. If neither (a) nor (b)
      is specified, 00 is assumed.

      (a) Using the YKSETENV command
          The following example sets the host ID to 0F:
          +-----------------------------------------------------------------+
          : START YKSETENV,PARM='YKCMDIF=0F'                                :
          +-----------------------------------------------------------------+

      (b) Defining a system symbol in the IEASYMxx parmlib member
          The following example sets the host ID to 0F:
          +-----------------------------------------------------------------+
          : SYMDEF(&YKCMDIF='0F')                                           :
          +-----------------------------------------------------------------+

    Note:
      If you register or change a host ID while Business Continuity Manager is
      running, CLI commands are executed using the previously set value. The
      registered or changed host ID takes effect the next time the YKLOAD
      command is executed (with a route list specified).

YKK001I YKINSCHK completed. RC=00,V/R=v.r.m-nn(zz),2013/01/21 19:48:59
READY
```

YKLISTID

Format

```
YKLISTID
[Δ1DD(DD-name-of-the-CLI-parameter-dataset)]
```

Function

This command is a REXX exec that requires the input parameter dataset to be allocated to a DD.

This command lists the IDs of configuration files.

Parameter

DD(*DD-name-of-the-CLI-parameter-dataset*) ~ <symbolic name><<CLIPARMS>>

Specify the DD name of the CLI parameter dataset.

Parameters of the CLI parameter dataset

Format

```
[PREFIXΔ1dataset-prefix-for-the-configuration-files]
[FINDΔ1CONFIG(ROUTE)]
[FINDΔ1CONFIG(GROUP)[Δ1DESCRIPTION]]
```

Parameters

`PREFIX` *dataset-prefix-for-the-configuration-files*

This is a common parameter included in the default parameter dataset. For details, see Default parameters on page 2-12.

`FIND`

Specify this to find and display the information specified for subsequent operands. If this parameter is omitted, the search results will not be displayed.

`CONFIG({GROUP|ROUTE})`

Specify the type of configuration files that you want to find.

`GROUP`

Displays the IDs of all copy group definition files that start with the character string specified for the `PREFIX` parameter.

`ROUTE`

Displays the IDs of all route list definition files that start with the character string specified for the `PREFIX` parameter.

`DESCRIPTION`

Specify this to display the content of Description in configuration files. If this parameter is omitted, the content of Description will not be displayed.

Return codes

The following table lists and describes the return codes when the `YKLISTID` command ends.

Table 2-47 YKLISTID command return code list

Return code	Meaning
-3	The script was executed in a non-TSO environment.
0	The command terminated normally.
8	No configuration files that meet the specified conditions were found.
32	An I/O error occurred.
40	• `OPEN`, input, or output could not be performed for the parameter dataset. • Dataset name could not be acquired because a failure occurred in LISTCAT.
48	There is an error in the record specified for the parameter dataset.

Output example

Input parameters

```
PREFIX   USERID.BCM
FIND     CONFIG(GROUP) DESCRIPTION
FIND     CONFIG(ROUTE)
```

Output example

```
PREFIX   USERID.BCM

TYPE  ID                                      DESCRIPTION
GROUP 3DC.TC                                  TC copy group in the TC-UR 3DC
GROUP 3DC.UR                                  UR copy group in the TC-UR 3DC
ROUTE ROUTEID
```

YKLOAD command

Format

YKLOAD

Δ_1STEM(*stem-name-1*)

Δ_1PREFIX(*prefix*)

{Δ_1GROUP(*copy-group-ID*)Δ_1DAD(*DADID*)[Δ_1ROUTE(*route-list-ID*[,{*route-label*|*}])[Δ_1VIACDEV]]|

Δ_1PATH(*path-set-ID*)[Δ_1DAD(*DADID*)[Δ_1ROUTE(*route-list-ID*[,{*route-label*|*}])[Δ_1VIACDEV]]]|

Δ_1ROUTE(*route-list-ID*[,{*route-label*|*}])Δ_1DAD(*DADID*)[Δ_1VIACDEV]}

Δ_1MSG(*stem-name-2*)

[Δ_1VAROPT]

Function

This command is a REXX subroutine.

This command loads the configuration file defined in the ISPF panel and creates a REXX variable structure. The types of REXX variable structures that are created by this command are as follows:

- Copy group structure
- Host-Discovered Array Index structure
- Host-Discovered Array structure
- Route list structure
- Path set structure
- STEM Index structure

Determination of the configuration file that is loaded and the REXX variable structure that is created depends on the specified parameters. For details about REXX variable structures, see REXX variable structures on page 3-24.

The following table lists and describes the configuration files and REXX variable structures for each parameter.

Table 2-48 Which file results in which REXX variable structure

Specified parameter	Loaded file	Created REXX variable structure
GROUP	• Disk configuration definition file • Copy group definition file	• Host-Discovered Array Index structure • Host-Discovered Array structure • Copy group structure • STEM Index structure#
ROUTE	• Disk configuration definition file • Route list definition file • Command device definition file	• Host-Discovered Array Index structure • Host-Discovered Array structure • Route list structure • STEM Index structure#
PATH	• Disk configuration definition file • Path set definition file	• Host-Discovered Array Index structure • Host-Discovered Array structure • Path set structure • STEM Index structure#

Note: Regardless of the prefix specified in the STEM parameter, the Host-Discovered Array Index structure is created with the prefix HCC.HDA, and the route list structure is created with the prefix HCC.ROUTELIST. The created REXX variable structures take effect within the script.

#
This is created only when the VAROPT parameter is specified.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix to be used for the REXX variable structure that stores information when a configuration file is loaded.

PREFIX(*prefix*) ~ <PREFIX string>

Specify the configuration file prefix.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

GROUP (*copy-group-id*) ~ <GROUP string>

Specify the copy group ID of the copy group to be loaded.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

DAD (*dad-id*) ~ <DAD string>

Specify the device address domain ID (local device address domain ID) of the current host.

You must specify this parameter when you operate the copy group.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

ROUTE (*route-list-ID*[, {*route-label*|*}])

Specify the route list ID to be loaded.

This parameter should be specified in the following cases:

- When using the TrueCopy consistency preservation function
- When the Remote DKC Control function is used.

route-list-ID ~ <ROUTE string of 8 or fewer characters>

Specify the route list ID.

{*route-label*|*} ~ <ROUTELABEL string of 8 or fewer characters>

When you specify a route label, the information about the command devices with the specified route label is loaded.

If * is specified, the information for all command devices is loaded regardless of whether they have a route label.

If both the route label and * are omitted, the information about the command devices with no route label is loaded.

VIACDEV

Specify this parameter when issuing the I/O of commands to Gen'ed volumes via a command device.

A route list must be defined for all storage systems that have a volume included in a copy group. If a command is issued to a storage system whose route list is not defined while this parameter is specified, the command is issued directly to Gen'ed volumes on which the operation is to be performed.

PATH (*path-set-id*) ~ <PATH string>

When you are loading a path set, specify the path set ID.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the MSG parameter is called.

VAROPT

If you specify this parameter, the Host-Discovered Array structure is created with the prefix HCC.DSK regardless of the prefix specified for the STEM parameter.

Tip: If you specify the VAROPT parameter and execute the YKLOAD command several times, the information that is loaded is merged with the Host-Discovered Array structure with the prefix HCC.DSK. This saves the processing time and memory that would be required to create multiple Host-Discovered Array structures.

Notes

- The YKLOAD command is a REXX subroutine, so it should be called from REXX script by the REXX CALL key word instruction.
- When you execute the YKLOAD command more than once using the same *stem-name*, the system overwrites the REXX variables.
- The invoked script executed from the CALL statement or EXEC command should not read a configuration file with the same stem-name as the one read by the invoking script.
- When operating without a route list, to execute the YKLOAD command several times, specify the same device address domain ID for all of the instances of the YKLOAD command. The specified device address domain ID should be the device address domain ID assigned to the storage system connected to the host where Business Continuity Manager is running.
- When operating with a route list, to execute the YKLOAD command several times, specify the ROUTE parameter for only the first executed instance of the YKLOAD command. For the succeeding instances of the YKLOAD command, do not specify ROUTE parameter, but specify the same device address domain ID as for the first instance of the YKLOAD command. Note that if you drop the route list structure, and then execute the YKLOAD command, you need to specify the ROUTE parameter.
- If you drop some of the REXX variable structures created by the YKLOAD command, Business Continuity Manager might not operate properly. If you want to drop some of the REXX variable structures, you must drop all of them.

- When you issue a command that requires a copy group *stem-name* as the input condition, execute the YKLOAD command before executing that command.
- Even if the GROUP parameter is not specified, the YKL007E message is not displayed if the ROUTE or PATH parameter is specified. If none of the GROUP, ROUTE and PATH parameters are specified, the YKL201E message is displayed.
- Do not execute the YKLOAD command by specifying the device address domain ID that was specified for the remote scan or NG scan using the DAD parameter. Doing so will cause an error. This could occur when, for example, a planned switch is made from the Primary site to the Secondary site and the disk configuration definition file of the storage system on the Secondary site (as created by the remote scan) is copied to the secondary host.

Return codes

The following table lists and describes the return codes of the YKLOAD command.

Table 2-49 YKLOAD command return code list

Return code	Meaning
0	The command completed normally.
4	Unknown XML attribute(s) or element(s) encountered in input file.
8	Unable to resolve device number for S-VOL in copy pair.
12	Unable to resolve volume serial number for P-VOL in copy pair.
16	Unable to resolve device number for P-VOL in copy pair.
36	Termination due to invalid XML structure encountered in input file, or system symbols are not defined correctly. Termination due to an error during license processing.
40	An error occurred when reading a file.
44	Termination due to invalid processing.
48	Termination due to invalid parameters.
52	Termination due to improper invocation method.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKMAKE command

Applies to ShadowImage, TrueCopy, and Universal Replicator.

Format

```
YKMAKE
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
{[Δ1{FORWARD|REVERSE}]|
[Δ1NOCOPY[Δ1{FORWARD|REVERSE}]]|
[Δ1HOLD[Δ1FORWARD]]}
[Δ1SELECT({ALL|COND})]
[Δ1DEVN(p-vol-device-number,s-vol-device-number)|ORDER(stem-name-3)]
[Δ1ONLINE({YES|NO})]
[Δ1JNLGRP({LINEAR|DISPERSED})]
[Δ1COPYPACE({SLOW|NORMAL|FAST})]
```

Function

This command is a TSO/E command called from REXX scripts.

This command creates copy pairs by full copy for the specified copy group and changes the volume status to the `DUPLEX` status.

For a copy group container with EXCTG ID, journal groups are registered in EXCTG after the copy pairs are created.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the copy group structure that stores information about the copy group for which you want to create copy pairs. Specify the same character string as the one specified in the `STEM` parameter of the `YKLOAD` command that loaded the corresponding copy group. The last character must be a period (`.`).

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (`.`).

The message structure is initialized when the CLI command with the same name as the `MSG` parameter is called.

{FORWARD|REVERSE}

Specify the copy direction.

`FORWARD`

The command creates a copy pair directed from the primary site to the secondary site.

`REVERSE`

Creates a copy pair in the reverse direction, from the secondary site to the primary site.

NOCOPY

The command creates a copy pair without copying between P-VOL and S-VOL. The command is used only when the two volume statuses are exactly the same.

HOLD

Applies to Universal Replicator.

The copy pair status is transitioned to the `HOLD` status.

SELECT({ALL|COND})

Specify the selection method for the copy pair to be manipulated by the command. When not specified, `ALL` is assumed.

`ALL`

All the copy pairs in the copy group are to be manipulated by the command. Note that if the `DEVN` parameter is specified, the copy pair specified for the parameter becomes the execution target of the command. If the `ORDER` parameter is specified, the copy pairs specified for the `ORDER` parameter become the execution targets of the command.

`COND`

The pairs to be manipulated by the command depend on their volume status. If all copy pairs in the copy group are either affected by the command or in the target status, processing terminates with return code `0`. If copy pairs that are not affected by the command are included in the copy group, processing terminates with return code `4`. For more information about copy groups affected by the command and its target status, see the table "Copy pair statuses for which commands with `SELECT(COND)` specified are subject to processing" in the *Hitachi Business Continuity Manager User Guide*.

For a copy group container with EXCTG ID, journal groups not registered in EXCTG are registered even if there is no volume that is manipulated by the command.

DEVN(*p-vol-device-number*,*s-vol-device-number*) ~ <4-digit hexadecimal number, 4-digit hexadecimal number>

Specify the device number of the copy pair (P-VOL and S-VOL) to operate.

If this parameter is specified for a copy group container with EXCTG ID, the following operations are performed because journal groups are not registered in EXCTG.

No.	Condition	Operation
1	A journal group specified by the DEVN parameter is already registered in EXCTG.	Copy pairs that have been created are transitioned to the DUPLEX status, and then included in EXCTG.
2	A journal group specified by the DEVN parameter is not registered in EXCTG.	Copy pairs that have been created are not included in EXCTG even after they have transitioned to the DUPLEX status.

ORDER(*stem-name-3*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the ORDER structure. If you specify this parameter, you can create only the relevant copy pairs in the order they are specified in the ORDER structure. The last character must be a period (.). If you specify this parameter for a copy group container with EXCTG ID, the command operates in the same way as when the DEVN parameter is specified.

ONLINE({YES|NO})

Specify whether to create a copy pair if the copy destination volume is online.

YES

Create a copy pair even if the copy destination volume is online.

NO

Do not create a copy pair if the copy destination volume is online.

JNLGRP({LINEAR|DISPERSED})

Applies to Universal Replicator.

Specifies the order in which the copy pair is created within the storage system. If you specify the ORDER parameter, the JNLGRP parameter is disabled.

LINEAR

Creates the copy pair in the order of definitions in the copy group definition file.

DISPERSED

Creates the copy pair so that the journal group to which the volume belongs is dispersed.

In an environment that meets the following conditions, you can improve performance by dispersing the load on the journal volumes that are being used by executing the YKMAKE command with the DISPERSED parameter specified.

- Within a copy group, more than one journal group is defined in the same storage system.
- Within each journal group, 128 or more copy pairs are defined.
- The line speed is sufficient.

COPYPACE({SLOW|NORMAL|FAST})

Applies to ShadowImage and TrueCopy.

Specify the copy pace when creating a copy pair. If this parameter is omitted, the copy pace value specified when the copy group was defined will be used.

SLOW

Slows the speed of the copy operation so that the effect of the copy operation on the I/O performance of the host is minimal.

NORMAL

The speed of the copy operation improves. However, update I/O load on P-VOL is high, and this might affect the I/O performance of the host.

FAST

Applies to ShadowImage.

Specifying FAST speeds up the copy operation so that it is faster than NORMAL. However, specifying FAST adversely affects the I/O performance of the host.

Note: Specifying COPYPACE(FAST) might adversely affect business operations, so we recommend that you perform such a copy operation outside of business hours.

Notes

- If you specify the NOCOPY parameter when the content of the P-VOL does not match that of the S-VOL, data inconsistencies will occur on the S-VOL when a copy pair is suspended or when a failure occurs. As a result, volumes might not be usable.
- If ONLINE(YES) is specified, volume corruption might occur because a copy pair can be created even if the S-VOL is being used. Thus, consideration with respect to volume operation is required, such as limiting operation to periods when the S-VOL is not being used.
- If transition to HOLD status is not performed, this might indicate an environment in which differentials cannot be maintained in the journal. Check the number of TrueCopy copy pairs sharing P-VOL with the specified copy pairs, the number of Universal Replicator copy pairs sharing S-VOL with the specified copy pairs, and the status of copy pairs.
- Since the EXCTG registration processing is performed asynchronously with the YKMAKE command, an error might occur during EXCTG registration even if the YKMAKE command terminates normally. Therefore, after executing the YKMAKE command on a copy group container with EXCTG ID, execute either the YKEWAIT GOTO(DUPLEX) command or the

YKQUERY command to check if an error occurred during EXCTG registration.

- If the YKMAKE command is executed for a copy group container with EXCTG ID, EXCTG registration might fail with error code 3688 even if a copy pair is successfully created. If error code 3688 occurs when the YKMAKE, YKQUERY, or YKEWAIT command is executed, re-execute the YKMAKE command specifying SELECT(COND) to register the journal group in the EXCTG.
- When the COPYPACE(FAST) parameter is specified, if a ShadowImage copy group includes storage system volumes for which FAST is not supported, the copy pairs for which FAST is not supported will be copied by using NORMAL. In addition, if FAST is not supported for any of the storage system volumes in the copy group, the YKZ414E message is output and processing ends.
- When a copy is performed from low-capacity TrueCopy or Universal Replicator volumes to high-capacity volumes, if a failure occurs on the secondary site, a TrueCopy or Universal Replicator copy cannot be performed in the reverse direction (from the Secondary site to the Primary site). We recommend strongly that copying from a small volume to a large volume function be used exclusively for data migration.

Return codes

The following table lists and describes the return codes of the YKMAKE command.

Table 2-50 YKMAKE command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
4	Since a volume with an invalid status was found in the copy group, processing for the volume will be skipped.
32	• One or more I/O error was encountered. • A change in an I/O configuration definition was detected.
36	Invalid or missing data in a REXX variable.
40	An error occurred while a REXX variable was being written.
44	Termination due to processing errors.
48	Termination due to invalid parameters, such as in the following cases: • When the copy pair corresponding to the device number specified with the DEVN parameter is not found. • When the COPYPACE parameter is specified for Universal Replicator.

Return code	Meaning
	• When the `COPYPACE(FAST)` parameter is specified for copy types other than ShadowImage.
`128`	The command terminated abnormally. The user does not have permission to execute this command.

YKQEXCTG command

Applies to Universal Replicator.

Format

```
YKQEXCTG
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
Δ1TO({SECONDARY|PRIMARY})
```

Function

This is a TSO/E command.

Information about the copy group container with EXCTG ID is acquired from the supervisor disk controller at the site specified for the `TO` parameter.

Parameters

`STEM(`*stem-name-1*`)` ~ <REXX prefix of 64 or fewer characters>

Specifies the prefix of the copy group structure that contains the copy group container with EXCTG ID for which you want to acquire EXCTG information. Specify the same character string as you specified for the `STEM` parameter of the `YKLOAD` command that was used to load the copy group. The last character must be a period (`.`).

EXCTG information is stored under `Exctg2` in the copy group structure.

`MSG(`*stem-name-2*`)` ~ <REXX prefix of 64 or fewer characters>

Specifies a prefix for the name of the message structure used to store messages generated by this command. The last character must be a period (`.`).

The message structure is reinitialized whenever a CLI command is called with the same name specified for the `MSG` parameter.

`TO({SECONDARY|PRIMARY})`

Specifies the site where the supervisor disk controller from which EXCTG information will be acquired is located.

`SECONDARY`

Acquires information from the supervisor disk controller defined for the secondary site when defining a copy pair. If the current copy direction is the forward direction, information is valid for the copy group container with EXCTG ID for the forward direction.

`PRIMARY`

Acquires information from the supervisor disk controller defined for the primary site when defining a copy pair. If the current copy direction is the reverse direction, information is valid for the copy group container with EXCTG ID for the reverse direction.

Notes

Before using the `YKQEXCTG` command to acquire EXCTG information, use the `YKQUERY` command to confirm that consistency is preserved for EXCTG. If consistency is not preserved for EXCTG, `null` might be set for the EXCTG information stored under `Exctg2` in the copy group structure. For details about how to verify whether consistency is preserved for EXCTG, see the description of EXCTG in the *Hitachi Business Continuity Manager User Guide*.

Return codes

The following table lists and describes the return codes of the `YKQEXCTG` command.

Table 2-51 YKQEXCTG command return code list

Return code	Meaning
`-3`	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
`-1`	An interruption occurred during execution.
`0`	The command terminated normally.
`32`	• An I/O error occurred. • A change was detected in the I/O configuration definition.
`36`	An invalid or unknown structure was found.
`40`	An error occurred while performing a REXX variable write operation.
`44`	The command terminated due to a processing error.
`48`	The command terminated due to invalid parameters.
`128`	The command terminated abnormally. The user does not have the permissions necessary to execute this command.

YKQHPATH command

Format

```
YKQHPATH
Δ1DEVN(device-number)
```

Function

This command is a TSO/E command called from REXX scripts.

This command checks the connection status of the I/O path between the host and storage system. It sets in the return code the connection status of the I/O path for a specified volume.

Parameters

DEVN(*device-number*) ~ <4 hexadecimal characters>

Specify the device number of the volume for which the I/O path connection status is to be acquired.

Notes

If multiple subchannel sets are used, the active subchannel set ID of the volumes with the specified device number must be 0. If the ID is not 0, the YKQHPATH command terminates abnormally with the return code 8.

Return codes

The following table lists and describes the return codes of the YKQHPATH command.

Table 2-52 YKQHPATH command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	I/O path of the specified device is available.
4	Acquisition of I/O path status failed because the version of the user SVC routine was too old.
8	• There was no available I/O path for the specified device. • The active subchannel set ID of the volumes with the specified device number is not 0.
16	The specified device was not found, or the specified device was not DASD, or an ALIAS volume of PAV was specified.

Return code	Meaning
44	The command terminated due to a processing error.
48	Termination due to invalid parameters.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKQRYDEV command

Applies to ShadowImage, TrueCopy, TrueCopy with the HyperSwap attribute, Universal Replicator, and CMD.

Format

```
YKQRYDEV
Δ1STEM(stem-name-1)
{Δ1SN(storage-system-serial-number)Δ1CU(cu-number)Δ1CCA(cca-number)|
Δ1DEVN(device-number)}
Δ1MSG(stem-name-2)
[Δ1PATH[Δ1SSN(serial-number)Δ1[SMODEL({VSP|VSPG1000|VSPG1500|
VSPF1500|VSP5100|VSP5200|VSP5500|VSP5600|VSP5100H|VSP5200H|VSP5500H|
VSP5600H})]]]
```

Function

This command is a TSO/E command called from REXX scripts.

Storage system information about the specified volume is obtained from the storage system, and stored in the device information structure specified by the `STEM` parameter. For a copy pair, you can specify this for either the P-VOL or the S-VOL.

If the specified volume is not found, or storage system information cannot be obtained due to an I/O error, an error message is created in the message structure, and a non-zero return code is returned.

Parameters

`STEM(`*stem-name-1*`)` ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the device information structure in which the storage system information is stored. The last character must be a period (.).

`SN(`*storage-system-serial-number*`)` ~ <from 5 to 12 alphanumeric characters>

Specify the serial number of the storage system to which the volume obtaining storage system information belongs.

When this parameter is specified, the route list must be loaded before the command is executed.

CU (*cu-number*) ~ <2-digit hexadecimal number>

Specify the control unit number of the volume for obtaining storage system information.

When this parameter is specified, the route list needs to be loaded before the command is executed.

CCA (*cca-number*) ~ <2-digit hexadecimal number>

Specify the command control address number of the volume for obtaining storage system information.

When this parameter is specified, the route list needs to be loaded before the command is executed.

DEVN (*device-number*) ~ <4- or 5-digit hexadecimal number>((00000-3FFFF))

Specify the device number of the volume for obtaining storage system information.

When multiple subchannel sets are used, specify this parameter as a 5-digit number by adding the 1-digit subchannel set ID before the device number. If the subchannel set ID is omitted, `0` is assumed.

This parameter can only be specified for locally connected devices. It cannot be specified for Non Gen'ed volumes.

MSG (*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (`.`).

The message structure is initialized when the CLI command with the same name as the `MSG` parameter is called.

PATH

Specify this parameter if you want to obtain information on inter-control unit or inter-disk controller logical paths. If this parameter is specified, the command obtains information on the inter-disk controller logical paths that are established from storage systems to which the volume specified by the `DEVN` parameter or the `SN`, `CU`, and `CCA` parameters belongs. Additionally, the command also obtains information on inter-control unit logical paths established from control units to which this volume belongs. The obtained information is stored in a path set structure with a name that begins with *stem-name-specified-in-STEM-parameter* `PATH`.

SSN(*serial-number*) ~ <from 5 to 12 alphanumeric characters>

To obtain information on an inter-disk controller logical path, specify the serial number of the secondary storage system for the inter-disk controller logical path you want to obtain. You can obtain information on inter-disk controller logical paths with a primary storage system to which the volume specified by the DEVN parameter or the SN, CU, and CCA parameters belongs, and with a secondary storage system is one that has the serial number specified by the SSN parameter. If this parameter is omitted, even if the PATH parameter is specified, the command will only acquire inter-control unit logical path information (without acquiring inter-disk controller logical path information).

SMODEL({VSP|VSPG1000|VSPG1500|VSPF1500|VSP5100|VSP5200|VSP5500|VSP5600|VSP5100H|VSP5200H|VSP5500H|VSP5600H})

To obtain information on an inter-disk controller logical path, specify the model of the secondary storage system for the inter-disk controller logical path you want to obtain. If this parameter is omitted, VSP is assumed.

Return codes

The following table lists and describes the return codes of the YKQRYDEV command.

Table 2-53 YKQRYDEV command return code list

Return codes	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
32	• One or more I/O error was encountered. • A change in an I/O configuration definition was detected.
40	An error occurred while a REXX variable was being written.
44	Termination due to processing errors.
48	Termination due to invalid parameters.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKQRYPTH command

Applies to PTH.

Format

```
YKQRYPTH
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
[Δ1PSN(storage-system-serial-number)[Δ1PCU(cu-number)]]
[Δ1SSN(storage-system-serial-number)[Δ1SCU(cu-number)]]
[Δ1PTID(path-group-ID)]
[Δ1{FORWARD|REVERSE}]
[Δ1RESTRUCT]
[Δ1TYPE({CU|DKC})]
```

Function

This command is a TSO/E command called from REXX scripts.

This command acquires the status of all physical paths allocated to all or some of the logical paths identified in the path set that is stored in the path set structure with the prefix specified by the STEM parameter.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the path set structure that stores information about the logical path that has the status you want to obtain. Specify the same character string as the one specified in the STEM parameter of the YKLOAD command that loaded the corresponding logical path. The last character must be a period (.).

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the MSG parameter is called.

PSN(*storage-system-serial-number*) ~ <from 5 to 12 alphanumeric characters>

If this parameter is specified, for each logical path within the path set stored in the path set structure specified for the STEM parameter, inter-control unit logical paths will be acquired in all cases where the paths treat control units within storage systems (that have the serial number specified by this parameter) as main control units, and inter-disk controller logical paths will be acquired in all cases where the paths treat the storage system (that has

the serial number specified by this parameter) as the primary storage system.

If neither this parameter nor any other parameters are specified, the command obtains the status of all logical paths.

PCU(*cu-number*) ~ <2-digit hexadecimal number>

If this parameter is specified, out of the logical paths within the path set stored in the path set structure specified for the STEM parameter, inter-control unit logical paths will be acquired in all cases where the control unit number of the main control unit matches the value specified for this parameter. Inter-disk controller logical paths are not affected by this parameter.

If neither this parameter nor any other parameters are specified, the command acquires all inter-control unit logical paths.

SSN(*storage-system-serial-number*) ~ <from 5 to 12 alphanumeric characters>

If this parameter is specified, out of the logical paths within the path set stored in the path set structure specified for the STEM parameter, inter-control unit logical paths will be acquired in all cases where the paths treat control units within storage systems (that have the serial number specified by this parameter) as remote control units, and inter-disk controller logical paths will be acquired in all cases where the paths treat the storage system (that has the serial number specified by this parameter) as the secondary storage system.

If neither this parameter nor any other parameters are specified, the command acquires all logical paths.

SCU(*cu-number*) ~ <2-digit hexadecimal number>

If this parameter is specified, out of the logical paths within the path set stored in the path set structure specified for the STEM parameter, inter-control unit logical paths will be acquired in all cases where the control unit number of the remote control unit matches the value specified for this parameter. Inter-disk controller logical paths are not affected by this parameter.

If neither this parameter nor any other parameters are specified, the command acquires all inter-control unit logical paths.

PTID(*path-group-ID*) ~ <2-digit hexadecimal number>

If this parameter is specified, for each logical path within the path set stored in the path set structure specified for the STEM parameter, inter-disk controller logical paths that have the path group ID specified for this parameter are acquired. Inter-control unit logical paths are not affected by this parameter.

If neither this parameter nor any other parameters are specified, the command acquires all the logical paths.

{FORWARD|REVERSE}

Specify the direction of the logical path whose status you want to acquire.

If neither is specified, the command will acquire the status of a bidirectional logical path.

`FORWARD`

The command acquires the status of forward logical paths that are identified in the path set stored in the path set structure specified by the `STEM` parameter, each of which extends from the initiator node defined by *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.Pri` to the target node defined by *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.Sec`.

`REVERSE`

The command acquires the status of the reverse logical paths that are identified in the path set stored in the path set structure specified by the `STEM` parameter. Each path is a reverse logical path from the initiator node defined by *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.Sec` to the target node defined by *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.Pri`.

RESTRUCT

If the port information is set on the storage system, the command sets the port information on the storage system to the REXX variable.

TYPE({CU|DKC})

This parameter specifies the type (inter-control unit logical path or inter-disk controller logical path) of the logical path for which the status is to be acquired.

If neither this parameter nor any other parameters are specified, the command acquires the status for all logical paths.

`CU`

Out of the logical paths within the path set stored in the path set structure specified by the `STEM` parameter, the status is acquired for the logical paths that have `CU` set for *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.type`.

`DKC`

Out of the logical paths within the path set stored in the path set structure specified by the `STEM` parameter, the status is acquired for the logical paths that have `DKC` set for *stem-name-specified-in-STEM-parameter*`PATH.`*n*`.type`.

Notes

- Before executing the command, create and load the path set definition file.
- If a message that contains sense information for the storage system is output, see the list of error codes in the *Hitachi Storage Management Software for Mainframe Messages* to eliminate the cause of the error. Alternatively, in the Edit Logical Path Definition panel, specify a different, valid volume on which a device scan has been performed, in control unit, SSID and CCA in the path set definition file for the command execution target.
- When you execute the `YKQRYPTH`, `YKBLDPTH`, or `YKDELPTH` command after executing the `YKQRYPTH` command with the `RESTRUCT` parameter specified, use the information obtained from the storage system.
- If the storage system is directly connected to the host, the volume determined based on the following conditions is used as the I/O destination volume regardless of the specification of the `YKLOAD` command's `VIACDEV` parameter.
  - If the route list has been loaded and the command device has been defined for the target storage system, the command device is used.
  - If the route list has not been loaded, or if the route list has been loaded but the command device has not been defined for the target storage system, the volume specified in the path set definition file is used.
  - If the route list has not been loaded, or if the route list has been loaded but the command device has not been defined for the target storage system, and no volume is specified in the path set definition file, the volume specified in the disk configuration definition file is used.

Return codes

The following table lists and describes the return codes of the `YKQRYPTH` command.

Table 2-54 YKQRYPTH command return code list

Return code	Meaning
`-3`	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
`-1`	An interruption occurred during execution.
`0`	The command completed normally. All paths are established.
`4`	Successful completion. A logical path exists for which not all of the corresponding physical paths are established.

Return code	Meaning
8	• The port information stored in the REXX variable of the detected logical path does not match the port information that is set on the storage system. • The port information recorded in the REXX variable was updated.
12	The command terminated normally, but detected a logical path whose corresponding physical paths include a path with abnormal status.
32	• One or more I/O error was encountered. None or only some of the logical paths was acquired. • A change in an I/O configuration definition was detected.
36	No target path was found.
40	An error occurred while a REXX variable was being read or written.
44	Command execution terminated abnormally due to insufficient capacity or some other internal cause. None or only some of the logical paths were acquired.
48	Command execution terminated because of an invalid parameter. Acquisition of the status of all logical paths was not successful.
56	Command execution terminated because a dynamic change in an I/O configuration definition was detected.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKQUERY command

Applies to ShadowImage, TrueCopy, TrueCopy with the HyperSwap attribute, and Universal Replicator.

Format

```
YKQUERY
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
[Δ1{[DEVN(p-vol-device-number,s-vol-device-number)]
[Δ1TO({PRIMARY|SECONDARY})]|VERIFY}]
```

Function

This command is a TSO/E command called from REXX scripts.

This command displays the copy pair volume status for the specified copy group.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the copy group structure that stores information about the copy group whose copy pair status you want to display. Specify the same character string as the one specified in the STEM parameter of the YKLOAD command that loaded the corresponding copy group. The last character must be a period (.).

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the MSG parameter is called.

DEVN(*p-vol-device-number*,*s-vol-device-number*) ~ <4-digit hexadecimal number, 4-digit hexadecimal number>

Specify the device number of the copy pair (P-VOL and S-VOL) to operate.

Note that, for copy group containers with EXCTG IDs, the command checks the EXCTG registration information for all copy group containers.

After specifying the copy pair to operate, to view REXX variables (such as SimplexCt) shown in information for copy pairs that are not operation targets, execute the YKQUERY command or YKEWAIT command for all copy pairs.

TO({PRIMARY|SECONDARY})

Specify this parameter if you want to acquire the copy pair information from either the P-VOL or the S-VOL at the time the copy pair was defined. Note that the information you can acquire differs depending on the copy direction of the copy pair and the specified parameters. For the information that you can acquire, see REXX variables updated by YKQUERY command with the TO parameter specified on page 3-59.

PRIMARY

The information is acquired from the P-VOL at the time the copy pair was defined.

SECONDARY

The information is acquired from the S-VOL at the time the copy pair was defined.

VERIFY

If this parameter is specified, the command checks the copy group structure, provided that the copy pair is not in the SIMPLEX status, and allows information to be acquired from the P-VOL. For details about the content that is checked, see the description for "Consistency check between copy group definitions and copy pair configurations" in the *Hitachi Business Continuity Manager User Guide*.

Note

- For a copy group container with EXCTG ID, if you execute the YKDELETE command and then the YKQUERY command to obtain the copy pair status, the YKZ296E message sometimes appears when the dissolving of the copy pair is detected at a different time from the dissolving of EXCTG, but this does not mean that an error has occurred. However, for a copy group container with EXCTG ID, we recommend that you execute the YKDELETE command and then the YKEWAIT GOTO(SIMPLEX) command, wait until the copy pair status changes to SIMPLEX, and then execute the YKQUERY command.
- If all of the following conditions are satisfied, the status cannot be acquired even if the TO parameter is specified:
  - When the copy type is ShadowImage
  - When the volume is a Non Gen'ed volume
  - When an error occurs in the pair Gen'ed volume

Return codes

The following table lists and describes the return codes of the YKQUERY command.

Table 2-55 YKQUERY command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
8	P-VOL(s) in incompatible status. For example, this includes the following case: • The P-VOL is in the offline status.
12	The VERIFY parameter was specified, and the copy group definition was found to be inconsistent with the actual copy group.
16	The P-VOL is in an inconsistent status. For example, this includes the following case:

Return code	Meaning
	• In a ShadowImage copy group, the P-VOL for the copy pair for which processing is attempted already belongs to a copy pair with a third S-VOL other than the S-VOL defined for the copy group.
20	The S-VOL is in an inconsistent status. For example, this includes the following case: • The status of the P-VOL is SIMPLEX, and the status of the S-VOL is anything other than SIMPLEX.
24	• An error occurred when the suspend processing was performed by using the UR ATTIME Suspend function. • The status of the Universal Replicator copy pair was invalid when the suspend processing was performed by using the UR ATTIME Suspend function. • The suspend processing has started because the timeout period had elapsed when the UR ATTIME Suspend function was executed.
32	• One or more I/O error was encountered. • A change in an I/O configuration definition was detected.
36	• An invalid or unknown element was found in the configuration. • An inconsistency was detected between a copy group definition and an actual copy group.
40	An error occurred while a REXX variable was being written.
44	Terminating due to processing errors. For example, this includes the following case: • A GETMAIN error has occurred. • For a copy group container with EXCTG ID, journal groups have not yet been registered in EXCTG.
48	Termination due to invalid parameters. For example, there is the following case: • When the copy pair corresponding to the device number specified with the DEVN parameter is not found.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKRECVER command

Applies to TrueCopy, TrueCopy with the HyperSwap attribute, and Universal Replicator.

Format

```
YKRECVER
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
[Δ1DEVN(p-vol-device-number,s-vol-device-number)]
```

Function

This command is a TSO/E command called from REXX scripts.

When copy pair operations from the Primary site are disabled due to failure or other reasons, this command dissolves a copy pair for the specified copy group from the Secondary site.

When you use this command to dissolve a copy pair, the volume on the Secondary site assumes the `SIMPLEX` status, but the volume on the Primary site takes the `SUSPER` status. Note, however, that depending on the status of the Primary site, the status of the volumes in the Primary site do not change even after the copy pair is dissolved.

The above site names are for cases when the copy direction of copy pair configuration and the copy direction which is actually recognized on the storage system are the same. For the opposite copy direction, replace the primary site and secondary site with the secondary site and primary site respectively. However, do not dissolve copy pairs during a planned outage.

When dissolving copy pairs in a copy group container with EXCTG ID, if all copy pairs are dissolved from a journal group, that journal group will be deleted from the EXCTG. In addition, if all journal groups are deleted from the EXCTG, the EXCTG data will be deleted.

Parameters

`STEM(`*stem-name-1*`)` ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the copy group structure that stores information about the copy group for which you want to dissolve the copy pairs. Specify the same character string as the one specified in the `STEM` parameter of the `YKLOAD` command that loaded the corresponding copy group. The last character must be a period (`.`).

`MSG(`*stem-name-2*`)` ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (`.`).

The message structure is initialized when the CLI command with the same name as the `MSG` parameter is called.

`DEVN(`*p-vol-device-number*`,`*s-vol-device-number*`)` ~ <4-digit hexadecimal number, 4-digit hexadecimal number>

Specify the device number of the copy pair (P-VOL and S-VOL) to operate.

Note

- Do not dissolve copy pairs during a planned outage.

- In 4x4x4 Delta Resync configurations, when all copy pairs in EXCTG whose copy direction is from the primary site to the remote site are dissolved, the journal groups whose copy direction is from the local site to the remote site are also dissolved from EXCTG registration.

  For example, if a Delta Resync is executed and then the `YKRECVER` command is executed when EXCTG is in the `HOLD` status and the copy direction is from the primary site to the remote site, the journal groups whose status is `DUPLEX` and copy direction is from the local site to the remote site are dissolved from EXCTG registration. As a result, the `YKZ296E` message is output if the `YKQUERY` command is executed to obtain the status of Universal Replicator copy pairs whose copy direction is from the local site to the remote site. In this case, perform either of the following operations to register journal groups in EXCTG for the storage system:

  - Execute the `YKMAKE HOLD` command for Universal Replicator copy pairs whose copy direction is from the primary site to the remote site.
  - Execute the `YKMAKE` command with a `SELECT(COND)` specified for Universal Replicator copy pairs whose copy direction is from the local site to the remote site.

Return codes

The following table lists and describes the return codes of the `YKRECVER` command.

Table 2-56 YKRECVER command return code list

Return code	Meaning
`-3`	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
`-1`	An interruption occurred during execution.
`0`	The command completed normally.
`32`	• One or more I/O error was encountered. • A change in an I/O configuration definition was detected.
`36`	Invalid or missing data in a REXX variable.
`40`	An error occurred while a REXX variable was being written.
`44`	Termination due to processing errors.
`48`	Termination due to invalid parameter. For example, as in the following case: • When the copy pair corresponding to the device number specified with the `DEVN` parameter is not found.
`128`	The command terminated abnormally. The user does not have permission to execute this command.

YKRESYNC command

Applies to ShadowImage, TrueCopy, and Universal Replicator.

Format

```
YKRESYNC
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
[Δ1SELECT({ALL|COND})]
{[Δ1{QUICK|NORMAL}]}[Δ1{FORWARD|REVERSE}][Δ1DEVN(p-vol-device-
number,s-vol-device-number)|
ORDER(stem-name-3)][Δ1VOLUNIT[({LINEAR|DISPERSED})]]
Δ1DELTAJNL[Δ1ERRCHK[Δ1DEVN(p-vol-device-number,s-vol-device-
number)]]|
Δ1ALLJNL[Δ1ERRCHK[Δ1DEVN(p-vol-device-number,s-vol-device-
number)]]|
Δ1PREPARE}
[Δ1ONLINE({YES|NO})]
[Δ1OPENMFUPDATE]
[Δ1COPYPACE({SLOW|NORMAL|FAST})]
```

Function

This command is a TSO/E command called from REXX scripts.

This command resynchronizes a copy pair by differential copy for the specified copy group and changes the volume status to the `DUPLEX` status.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the copy group structure that stores information about the copy group for which you want to synchronize a copy pair. Specify the same character string as the one specified in the `STEM` parameter of the `YKLOAD` command that loaded the corresponding copy group. The last character must be a period (`.`).

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (`.`).

The message structure is initialized when the CLI command with the same name as the `MSG` parameter is called.

SELECT({ALL|COND})

Specify the selection method for copy pair to be manipulated by the command. When not specified, `ALL` is assumed.

`ALL`

All the copy pairs in the copy group are to be manipulated by the command. Note that if the `DEVN` parameter is specified, the copy pair specified for the parameter becomes the execution target of the command. If the `ORDER` parameter is specified, the copy pairs specified for the `ORDER` parameter become the execution targets of the command.

`COND`

The pairs to be manipulated by the command depend on their volume status. If all copy pairs within the copy group are either affected by the command or in the target status, processing terminates with return code `0`. If copy pairs that are not affected by the command are included in the copy group, processing terminates with return code `4`. For more information about copy groups affected by the command and its target status, see the table "Copy pair statuses for which commands with `SELECT(COND)` specified are subject to processing" in the *Hitachi Business Continuity Manager User Guide*.

{QUICK|NORMAL}

Applies to ShadowImage.

Specify the copy mode.

`QUICK`

Transit to the `DUPLEX` status quickly.

`NORMAL`

Transit to the `DUPLEX` status after copy completion.

{FORWARD|REVERSE}

Specify the copy direction.

Based on the information updated since transiting to the `SUSPOP` status, the differences are copied for tracks and cylinders, and the `DUPLEX` status is recovered.

When the parameter is not specified in ShadowImage, the differences are copied from P-VOL to S-VOL.

When the parameter is not specified in TrueCopy or Universal Replicator, the differences of the copy pairs in the `SUSPOP` status are copied.

A copy pair with the S-VOL SWAP status is not copied. The copy direction is not changed after resynchronization.

`FORWARD`

In ShadowImage, the difference is copied from P-VOL to S-VOL.

In TrueCopy or Universal Replicator, the difference is copied from the Primary site to the Secondary site.

REVERSE

In ShadowImage, the difference is copied from S-VOL to P-VOL.

In TrueCopy or Universal Replicator, the difference is copied from the Secondary site to the Primary site.

DEVN(*p-vol-device-number*,*s-vol-device-number*) ~ <4-digit hexadecimal number, 4-digit hexadecimal number>

Specify the device number of the copy pair (P-VOL and S-VOL) to operate. If you specify this parameter after ATTIME suspend, execute the YKSUSPND command with the CANCEL parameter specified.

ORDER(*stem-name-3*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the ORDER structure. If you specify this parameter, you can resynchronize only the relevant copy pairs in the order they are specified in the ORDER structure. The last character must be a period (.). If the UR ATTIME suspend time has been set for the target copy group, execute the YKSUSPND command with the CANCEL parameter specified to cancel the UR ATTIME suspend time before you execute the YKRESYNC command with the ORDER parameter specified.

VOLUNIT[({LINEAR|DISPERSED})]

When this is specified, operation is performed by volume even when the environment supports operation by group.

Specify the order of operations on volumes in the storage system, by using the LINEAR parameter or the DISPERSED parameter. The default is LINEAR when only the VOLUNIT parameter is specified.

LINEAR

Resynchronizes the volume in the order of the definitions in the copy group definition file. This parameter is usually specified together with the SELECT(COND) parameter when you want to resynchronize (in units of individual volumes) only the copy pairs whose status do not match because of some reason such as an error. If you specify this parameter after ATTIME suspend, execute the YKSUSPND command with the CANCEL parameter specified. If you specify the ORDER parameter, the LINEAR parameter is disabled.

DISPERSED

Applies to Universal Replicator.

Resynchronizes the volume so that the journal group to which the volume belongs is dispersed.

In an environment that meets the following conditions, you can improve performance by dispersing the load on the journal volumes that are being

used by executing the YKRESYNC command with the DISPERSED parameter specified.

- Within a copy group, more than one journal group is defined in the same storage system.
- Within each journal group, 128 or more copy pairs are defined.
- The line speed is sufficient.

If you specify the ORDER parameter, the DISPERSED parameter is disabled.

The following describes the relationship between the VOLUNIT parameter specification and the command execution when issuing the YKRESYNC command to reverse the copy direction.

- When the VOLUNIT parameter is not specified:

  The command is executed only when the copy pair status is SWAPPING.
- When the VOLUNIT parameter is specified:

  The command is executed regardless of the copy pair status. However, if the SELECT(COND) parameter is specified at the same time, the command is executed only on the copy pair in the intended status.

  For details about the copy pairs for which operations are to be performed, see the table that describes the statuses of copy pairs subject to processing by the command described in the *Hitachi Business Continuity Manager User Guide*.

DELTAJNL

Applies to Universal Replicator.

Perform a Delta Resync. Copy to S-VOL only the journals on the P-VOL side that have a differential with the journals on the S-VOL side. After copying the differential, perform a transition to the DUPLEX status.

ALLJNL

Applies to Universal Replicator.

Perform a Delta Resync with full copy to resynchronize delta resync pairs. All the information of the P-VOL is copied to the S-VOL regardless of the differences between the two. After copying has been completed, perform a transition to the DUPLEX status.

When executing the YKRESYNC command with the ALLJNL parameter for a copy group which contains one or more copy pairs in the NODELTA status, perform the following procedure:

1. Execute the YKRESYNC command with both the ALLJNL parameter and the ERRCHK parameter to make sure the command terminates successfully with the return code 0.
2. Execute the YKRESYNC command with only the ALLJNL parameter to make sure there all copy pairs can perform full copy.

ERRCHK

Applies to Universal Replicator.

Identify the cause of the error that occurred when a delta resync or a delta resync with full copy was executed.

Specify the ERRCHK parameter with either the DELTAJNL parameter or the ALLJNL parameter in the following cases:

- To make sure Delta Resync (with or without full copy) can be performed correctly before executing the YKRESYNC command with either the DELTAJNL parameter or the ALLJNL parameter.
- When the copy pair statuses changes to HOLDER status after executing the YKRESYNC command with the DELTAJNL parameter or the ALLJNL parameter.

If the ERRCHK parameter is specified with the YKRESYNC command, no status transition will take place.

If there is a copy pair that cannot perform Delta Resync (with or without full copy), a message (YKZ251E, YKZ253E, YKZ255E, or YKZ257E) is displayed to indicate an error. Remove the cause of the error according to the message, and then re-execute the YKRESYNC command without the ERRCHK parameter.

If the ERRCHK parameter is specified and no abnormal copy pairs exist, the command will terminate normally with the return code 0.

The following table shows an example procedure using the ERRCHK parameter to recover copy pairs that are in an error status.

Table 2-57 Example procedure using the ERRCHK parameter after transition to HOLDER status

No.	Command	Description
1	`YKQUERY STEM(SF.TO.LA.) MSG(MSG.)`	Checks if all copy pairs are in the HOLD status.
2	`YKRESYNC STEM(SF.TO.LA.) MSG(MSG.) DELTAJNL SELECT(COND)`	Synchronizes delta resync pairs, and checks if the return code is 0.
3	`YKEWAIT STEM(SF.TO.LA.) MSG(MSG.) GOTO(DUPLEX) TIMEOUT(5)`	Checks the status of all copy pairs if the YKE003E message is output. Use the ERRCHK parameter if there is a copy pair in HOLDER status.
4	`YKRESYNC STEM(SF.TO.LA.) MSG(MSG.) DELTAJNL ERRCHK SELECT(COND)`	When this command is executed, the message that displays the cause is output, so you need to identify and fix the error.
5	`YKRESYNC STEM(SF.TO.LA.) MSG(MSG.) PREPARE SELECT(COND)`	Recovers pairs in failure status to HOLD status.

PREPARE

Applies to Universal Replicator.

Restore copy pairs that are in an error status (meaning copy pairs in the HOLDER status, not copy pairs in the SUSPER status) to the HOLD status. Remove the cause of the error in the copy pair that has the HOLDER status, and then specify that pair. If there is no problem, perform a transition to the HOLD status or to the HOLDTRNS status.

When this parameter is specified, commands can be executed whether S-VOL is online or offline (regardless of the specification in the ONLINE parameter).

ONLINE({YES|NO})

Specify whether to resynchronize a copy pair if the copy destination volume is online.

YES

The command resynchronizes copy pairs even when the S-VOL (P-VOL if the REVERSE parameter is specified) is online.

NO

The command does not resynchronize copy pairs when the S-VOL (P-VOL if the REVERSE parameter is specified) is online. When the destination volume is online, although an I/O error does not occur in the consistency group, an I/O error message is issued if VOLUNIT parameter is specified. In addition, for Universal Replicator, I/O error might occur in the consistency group.

OPENMFUPDATE

Applies to TrueCopy.

Specify this parameter to change the Open/MF Consistency attribute (if the Open/MF Consistency Preservation function is used). The Open/MF Consistency attribute of the copy group definition information that is loaded when the command that is executed is applied.

If the command is executed without this parameter specified, the Open/MF Consistency attribute of the copy group definition information that is loaded is not applied. When this parameter is specified, the command is executed in units of volumes, if the environment supports execution in units of groups.

COPYPACE({SLOW|NORMAL|FAST})

Applies to ShadowImage and TrueCopy.

Specify the copy pace when resynchronizing a copy pair. If this parameter is omitted, the copy pace value specified when the copy group was defined will be used.

SLOW

Slows the speed of the copy operation so that the effect of the copy operation on the I/O performance of the host is minimal.

NORMAL

The speed of the copy operation improves. However, update I/O load on P-VOL is high, and this might affect the I/O performance of the host.

FAST

Applies to ShadowImage.

Specifying FAST speeds up the copy operation so that it is faster than NORMAL. However, specifying FAST adversely affects the I/O performance of the host.

Note: Specifying COPYPACE(FAST) might adversely affect business operations, so we recommend that you perform such a copy operation outside of business hours.

Notes

- If operations with a REVERSE specification such as planned outage take place, to control TrueCopy or Universal Replicator from the script, we recommend that you specify the FORWARD or REVERSE parameter explicitly.
- When specifying the FORWARD or REVERSE parameter to change the copy direction of the copy group, be sure to execute the YKQUERY command or YKEWAIT command and obtain information for the changed copy direction before performing the operation.
- When a copy is performed from low-capacity TrueCopy or Universal Replicator volumes to high-capacity volumes, if a failure occurs on the secondary site, a TrueCopy or Universal Replicator copy cannot be performed in the reverse direction (from the Secondary site to the Primary site). We recommend strongly that copying from a small volume to a large volume function be used exclusively for data migration.
- After this command is executed against a volume is SWAPPING status, the direction of copy is reversed.
- The YKRESYNC command terminates successfully when the instruction to the copy pair succeeds. Even if the YKRESYNC command terminates with return code 0, the copy pair might not be in the DUPLEX status. After you execute the YKRESYNC command, use the YKQUERY or YKEWAIT command to make sure that the copy pair status has changed to DUPLEX. If there is a volume with a status that has not been changed, re-execute the YKRESYNC command with the VOLUNIT parameter specified for all the copy pairs.
- If ONLINE(YES) parameter is specified, volume corruption might occur because a copy pair can be created even if the S-VOL is being used. Thus, consideration with respect to volume operation is required, such as limiting operation to the time periods when the S-VOL is not being used.
- To use the YKRESYNC command to reflect the change in the ERRORLEVEL attribute on the device, specify the VOLUNIT parameter (or specify the

DEVN parameter on a copy pair basis). If the parameter is not specified, the attribute change is not reflected.

- Even if the status transition is successful, an I/O error might occur and the command might terminate with return code 32. When you create a script, code it in such a manner that the YKQUERY or YKEWAIT command is executed to check the results of status transitions, even if the command terminates with return code 32, and the processing resumes after a successful status transition.
- When the COPYPACE(FAST) parameter is specified, if a ShadowImage copy group includes storage system volumes for which FAST is not supported, the copy pairs for which FAST is not supported will be copied by using NORMAL. In addition, if FAST is not supported for any of the storage system volumes in the copy group, the YKZ414E message is output and processing ends.

Return codes

The following table lists and describes the return codes of the YKRESYNC command.

Table 2-58 YKRESYNC command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
4	Since a volume with an invalid status was found in the copy group, processing for the volume will be skipped.
32	• One or more I/O error was encountered. • A change in an I/O configuration definition was detected.
36	Invalid or missing data in a REXX variable.
40	An error occurred while a REXX variable was being written.
44	Termination due to processing errors.
48	Termination due to invalid parameters, such as in the following cases: • When the copy pair corresponding to the device number specified with the DEVN parameter is not found. • When not executing YKQUERY or YKEWAIT command immediately before executing a command specified with the FORWARD/REVERSE parameter. • When the COPYPACE parameter is specified for Universal Replicator. • When the COPYPACE(FAST) parameter is specified for copy types other than ShadowImage.

Return code	Meaning
128	The command terminated abnormally. The user does not have permission to execute this command.

YKRUN command

Applies to TrueCopy.

Format

```
YKRUN
△1STEM(stem-name-1)
△1MSG(stem-name-2)
```

Function

This command:

- Is a TSO/E command called from REXX scripts.
- Cancels the SCP status for the specified copy group and makes the update I/O for P-VOL enabled.
- Is executable for a copy group specified by consistency group ID.
- Works when the storage system has the corresponding function.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the copy group structure that stores information about the copy group for which you want to cancel the SCP status. Specify the same character string as the one specified in the STEM parameter of the YKLOAD command that loaded the corresponding copy group. The last character must be a period (.).

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the MSG parameter is called.

Return codes

The following table lists and describes the return codes of the YKRUN command.

Table 2-59 YKRUN command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
32	• One or more I/O error was encountered. • A change in an I/O configuration definition was detected.
36	Invalid or missing data in a REXX variable.
40	An error occurred while a REXX variable was being written.
44	Termination due to processing errors.
48	Termination due to invalid parameters.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKSCAN command

Format

```
YKSCAN
Δ1STEM(stem-name-1)
{Δ1FROM(X'nnnn')Δ1TO(X'nnnn')[Δ1SCHSET({n|*})]|
Δ1FROMVSN(volser)Δ1TOVSN(volser)}
Δ1MSG(stem-name-2)
Δ1ARRAYS(stem-name-3)
```

Function

This command is a TSO/E command called from REXX scripts.

This command scans the entire range of device numbers (subchannel addresses) and generates the `REXX` variables for the detected volumes.

The configuration file is manipulated when the command is executed.

Parameters

`STEM(`*stem-name-1*`)` ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the Host-Discovered Array structure used to store the volume scan results. The last character must be a period (.).

FROM(X'*nnnn*') ~ <4-digit hexadecimal number>

Specify the device number of the first volume to be scanned.

This parameter and the FROMVSN and TOVSN parameters are mutually exclusive.

TO(X'*nnnn*') ~ <4-digit hexadecimal number>

Specify the device number of the last volume to be scanned.

This parameter and the FROMVSN and TOVSN parameters are mutually exclusive.

The range from the FROM parameter to the TO parameter is scanned in ascending hexadecimal order.

SCHSET({*n*|*})

When multiple subchannel sets are used, specify the subchannel set ID that you want to scan. If this parameter is omitted, volumes whose subchannel set ID is 0 are scanned.

n~<1-digit hexadecimal number>((0 to 3))<<0>>

Volumes whose subchannel set ID is *n* are scanned.

*

Volumes of all subchannel set IDs are scanned.

FROMVSN(*volser*) ~ <from 1 to 6 alphanumeric characters>

Specify the volume serial number of the first volume to be scanned.

The online volumes within the range specified by the FROMVSN parameter and the TOVSN parameter are scanned.

When multiple subchannel sets are used, volumes whose device numbers are the same as those of the scanned online volumes are scanned in all subchannel sets.

This parameter and the FROM and TO parameters are mutually exclusive.

TOVSN(*volser*) ~ <from 1 to 6 alphanumeric characters>

Specify the volume serial number of the last volume to be scanned.

This parameter and the FROM and TO parameters are mutually exclusive.

The range from the FROMVSN parameter to the TOVSN parameter is scanned in EBCDIC order.

MSG (*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the MSG parameter is called.

ARRAYS (*stem-name-3*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the Host-Discovered Array Index structure. The last character must be a period (.).

The YKSCAN command returns the number of storage systems detected to *stem-name-specified-in-ARRAYS-parameter*0, and returns the information about the *n*th detected storage system to the corresponding REXX variable (the REXX variable with the name formed by appending *n* to the stem name specified by the ARRAYS parameter).

Notes

- Before creating a copy group, use the YKSCAN command to obtain the information on the volumes available on this site.
- An alias volume (PAV-Alias) bound to a parallel access volume (PAV) is not subject to scanning.
- The storage systems containing the volumes for which a local scan is to be performed must be connected to the host by using paths.

Return codes

The following table lists and describes the return codes of the YKSCAN command.

Table 2-60 YKSCAN command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally. The REXX variable corresponding to the scanned volume is created.
4	The command skipped a volume with an I/O path that was not available. The command generated the REXX variable for the volumes that were detected successfully.
8	I/O error(s) were encountered. The REXX variable corresponding to the scanned volume is created. However, if an I/O occurred while storage system information was being collected, the REXX variable is not created for any volume.

Return code	Meaning
32	A change in an I/O configuration definition was detected. The REXX variable corresponding to the scanned volume is created. However, if a dynamic change in an I/O configuration definition occurred while storage system information was being collected, the REXX variable is not created for any volume.
36	Processing ended because two or more storage systems have the same serial number.
40	An error occurred while a REXX variable was being written.
44	Terminating due to processing errors.
48	Terminating due to invalid parameters.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKSLEEP command

Format

```
YKSLEEP
△1{SEC(timeout-value)|MIN(timeout-value)}
```

Function

This command is a TSO/E command called from REXX scripts.

This command temporarily stops script execution for the specified time.

Parameters

SEC(*timeout-value*) ~ <numeric characters> ((1-9999))

Specify the time (in seconds) for which the script is to be temporarily stopped.

MIN(*timeout-value*) ~ <numeric characters> ((1-9999))

Specify the time (in minutes) for which the script is to be temporarily stopped.

Note

The YKSLEEP command might not operate immediately after the specified time passes, depending on the priority and operating status of the other tasks.

Return codes

The following table lists and describes the return codes of the `YKSLEEP` command.

Table 2-61 YKSLEEP command return code list

Return code	Meaning
0	The command completed normally.
8	Cancellation of the temporarily stopped status due to an interruption.
16	Termination due to invalid parameters.

YKSTATS command

Applies to Universal Replicator.

Format

```
YKSTATS
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
```

Function

This command is a TSO/E command called from REXX scripts.

The command acquires journal group operating information from both the master journal and restore journal storage systems.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the copy group structure that stores information about the copy group for which you want to acquire operating information. Specify the same character string as the one specified in the `STEM` parameter of the `YKLOAD` command that loaded the corresponding copy group. The last character must be a period (.).

The operating information is set under `STATS.`*n* in the copy group structure.

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the `MSG` parameter is called.

Notes

- Start Usage Monitor from the Storage Navigator before executing the YKSTATS command. Set the collection interval of Usage Monitor information to 10 minutes or less.
- If the specified copy group is a Universal Replicator copy group, in order to obtain correct information, you must start Usage Monitor for the control unit containing the journal volumes used by the copy group.
- Before using the YKSTATS command to obtain operating information, use the YKQUERY or YKEWAIT command to check if the copy pair status has been set. If no command is entered, a determination is made based on the copy group status for the YKQUERY or YKEWAIT command, and N/A might be displayed for operating information.
- If the YKRESYNC command is used to change the copy direction of a Universal Replicator copy group and then the YKSTATS command is used to acquire the operating information of the copy group, the operating information before the change might be temporary acquired. To acquire the latest operating information about the copy group, execute the YKSTATS command after Usage Monitor collects information for the first time after the change (that is, when the collection interval of Usage Monitor information has elapsed).

Return codes

The following table lists and describes the return codes of the YKSTATS command.

Table 2-62 YKSTATS command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
32	• One or more I/O error was encountered. • A change in an I/O configuration definition was detected.
36	Invalid or missing data in a REXX variable.
40	An error occurred while a REXX variable was being written.
44	Termination due to processing errors.
48	Termination due to invalid parameters.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKSTORE command

Format

```
YKSTORE
Δ1STEM(stem-name-1)
Δ1PREFIX(prefix)
Δ1MSG(stem-name-2)
[Δ1PATH]
[Δ1UIDCHK]
```

Function

`YKSTORE` command is a REXX subroutine.

This command writes information about the copy group or path set on which an operation is being performed to the configuration file defined in the ISPF panel. For details about configuration files, see XML document type definitions on page 3-6.

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the copy group structure that stores information about the copy group to be stored in the copy group definition file. Specify the same character string as the one specified in the `STEM` parameter of the `YKLOAD` command that loaded the corresponding copy group. The last character must be a period (`.`).

The copy group structure is initialized for each process.

PREFIX(*prefix*) ~ <PREFIX string>

Specify the configuration file prefix.

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (`.`).

The message structure is initialized when the CLI command with the same name as the `MSG` parameter is called.

PATH

Specify this parameter if you want to store path set information in the path set definition file. Information other than path sets is not stored.

UIDCHK

Specify this parameter if you want to compare the value of `UpdateID` (last update ID) stored in the REXX variable structure and the value of `UpdateID` stored in the configuration file when the configuration file is updated. The command will not update the configuration file if, after the configuration file has been loaded, the value of `UpdateID` is changed, because the configuration file is then updated by another user.

Notes

- The `YKSTORE` command is a REXX subroutine, so it must be called from a REXX script by the REXX CALL key word instruction.
- When you store the current volume status in a configuration file, we recommend that you specify a prefix other than the prefix used when the copy group was created and manage the copy group separately.

Return codes

The following table lists and describes the return codes of the `YKSTORE` command.

Table 2-63 YKSTORE command return code list

Return code	Meaning
0	The command completed normally.
4	The configuration file was not updated because the value of `UpdateID` in the REXX variable structure and the value in the configuration file did not match.
36	Terminating due to invalid REXX variable structure.
44	Terminating due to invalid processing.
48	Terminating due to invalid parameters.
52	Terminating due to improper invocation method.

YKSUSPND command

Applies to ShadowImage, TrueCopy, and Universal Replicator.

Format

```
YKSUSPND
Δ1STEM(stem-name-1)
Δ1MSG(stem-name-2)
{Δ1ATTIME(time-value)
[Δ1ATOPT({NORMAL|UR[({STEADY|QUICK})]})][Δ1TIMEOUT(timeout-value)]
[Δ1GENID(generation-id)]|
CANCEL[Δ1DEVN(p-vol-device-number,s-vol-device-number)][Δ1VOLUNIT]|
```

PURGE[Δ1SVOL({PROTECT|PERMIT})][Δ1DEVN(*p-vol-device-number*,*s-vol-device-number*)][Δ1VOLUNIT]|
FLUSH[Δ1SVOL({PROTECT|PERMIT})][Δ1DEVN(*p-vol-device-number*,*s-vol-device-number*)][Δ1VOLUNIT]|
QUICK[Δ1SVOL({PROTECT|PERMIT})][Δ1DEVN(*p-vol-device-number*,*s-vol-device-number*)][Δ1VOLUNIT]|
FORWARD[Δ1SVOL({PROTECT|PERMIT})][Δ1DEVN(*p-vol-device-number*,*s-vol-device-number*)][Δ1VOLUNIT]|
REVERSE[Δ1SVOL({PROTECT|PERMIT})][Δ1DEVN(*p-vol-device-number*,*s-vol-device-number*)][Δ1VOLUNIT]}
[Δ1SELECT({ALL|COND})]

Function

This command is a TSO/E command called from REXX scripts.

This command suspends a copy pair for the specified copy group and changes the volume status to the `SUSPOP` status.

The following table describes the correspondence between functions, copy types, and parameter names.

Function		Copy type			Parameter name
		SI	TC	UR	
Function related to ATTIME suspensions	Sets the ATTIME suspend time.	Y	--	--	ATTIME
	Cancels the ATTIME suspend time.	Y	--	--	CANCEL
Function for specifying how to synchronize data at the time of a suspension	Suspends the copy pair when data up until the time of the suspend request is synchronized.	--	--	Y	FLUSH
	Suspends the copy pair when a suspend request is issued, even if unsynchronized data remains.	--	--	Y	PURGE
QUICK mode function	Suspends the copy pair so that the S-VOL can be read or written even when data is being copied.	Y	--	--	QUICK
Function for specifying the copy direction after resynchronization	Suspends the copy pair so that the copy direction goes from the primary site to the secondary site.	--	Y	Y	FORWARD
	Suspends the copy pair so that the copy direction goes from the secondary site to the primary site.	--	Y	Y	REVERSE
Function for selecting the copy pair to be manipulated by the command	Determines the copy pair to be manipulated by the command according to the copy pair status.	Y	Y	Y	SELECT

Legend: Y: Can be specified; --: Cannot be specified

Parameters

STEM(*stem-name-1*) ~ <REXX prefix of 64 or fewer characters>

Specify the prefix of the name of the copy group structure that stores information about the copy group for which you want to suspend the copy pair. Specify the same character string as the one specified in the STEM parameter of the YKLOAD command that loaded the corresponding copy group. The last character must be a period (.).

MSG(*stem-name-2*) ~ <REXX prefix of 64 or fewer characters>

Specify a prefix for the name of the message structure used to store the messages to be generated by this command. The last character must be a period (.).

The message structure is initialized when the CLI command with the same name as the MSG parameter is called.

ATTIME(*time-value*)

Applies to ShadowImage.

If you use the ATTIME suspend function, specify the time at which suspend processing is performed.

This parameter is valid for copy groups specified by consistency group ID. If you do not use the UR ATTIME Suspend function, this parameter cannot be specified for a remote storage system. You must use the UR ATTIME Suspend function for a copy group in which the P-VOLs are Non Gen'ed volumes. If you do not use the UR ATTIME Suspend function, an I/O error will occur.

For a copy group to which the NORMAL ATTIME suspend time has been set, do not set the UR ATTIME suspend time. If you want to set the UR ATTIME suspend time for a copy group to which the NORMAL ATTIME suspend time has been set, cancel the setting of the NORMAL ATTIME suspend time without using the Remote DKC Control function, and then set the UR ATTIME suspend time.

This setting is reset by P/S ON/OFF on the primary storage system.

The format of *time-value* is as follows:

YYYYMMDD:*HHMMSS*:*mmmm*:*ss*, {LOCAL|GMT}

YYYY ~ <numeric characters> ((1970-2042))
Specify the year.

MM ~ <numeric characters> ((01-12))
Specify the month.

DD ~ <numeric characters> ((01-31))

Specify the date.

HH ~ <numeric characters> ((00-23))
Specify the hour.

MM ~ <numeric characters> ((00-59))
Specify the minute.

SS ~ <numeric characters> ((00-59))
Specify the second.

mmmm ~ <numeric characters> ((0000-9999))
Specify an offset value from the time specified in *YYYYMMDD*:*HHMMSS*, in minutes.

ss ~ <numeric characters> ((00-99))
Specify an offset value from the time specified in *YYYYMMDD*:*HHMMSS*, in seconds.

`LOCAL`
This value means that the specified time is in local time.

`GMT`
This value means that the specified time is in GMT.

Note: When you specify the time using the `ATTIME` parameter, note the following:

- Do not specify a time value earlier than the command execution time.
- The processing might be suspended when the specified time is reached during command execution. Take the command execution time into consideration when you specify the time.
- Do not specify a time value larger than the command execution time plus 65,536 minutes.
- To check the specified time in another way, see the ISPF log or the execution result of the script.
- Do not specify a time later than `2042/9/17 23:53:47 GMT`.
- If the host on which the command is executed is different from the host that issues an I/O to the storage system, synchronize the time between the hosts.

`ATOPT({NORMAL|UR[({STEADY|QUICK})]})`

Applies to ShadowImage.

Specify the type of UR ATTIME Suspend function to be used. If you omit this parameter, the value specified in the ISPF panel when the ShadowImage copy pair was defined will be set.

`NORMAL`
The NORMAL ATTIME Suspend function is used.

`UR`

The UR ATTIME Suspend function is used.

A suspend mode (`STEADY` or `QUICK`) is set for the value specified on the ISPF panel during the ShadowImage copy pair definition.

`UR(STEADY)`

The UR ATTIME Suspend function is used. The suspend mode is set to `STEADY`.

The S-VOL can be referenced and updated after the data has been completely copied and the status has changed to `SUSPOP`.

`UR(QUICK)`

The UR ATTIME Suspend function is used. The suspend mode is set to `QUICK`.

The S-VOL can be referenced and updated even while data is being copied.

`TIMEOUT(`*timeout-value*`)` ~ <numeric characters> ((0-9999))

Applies to ShadowImage.

If you use the UR ATTIME Suspend function, specify the timeout value in minutes. When the journal is acquired at the remote storage system, the copy pair is suspended when the time period specified in the `TIMEOUT` parameter elapses after the time that was specified in the `ATTIME` parameter. This suspension takes place even if the update journal is not acquired after the time specified in the `ATTIME` parameter, or even if no-update journal is detected. Note that if the Universal Replicator copy pair is in the suspend status at the ATTIME suspend time, the value specified in the `TIMEOUT` parameter will become invalid, and the ShadowImage copy pair will be suspended at the ATTIME suspend time.

If you specify `0` or omit this parameter, the timeout value determined by the storage system will be set.

If you do not use the UR ATTIME Suspend function, the value specified in the `TIMEOUT` parameter will become invalid, and if no I/O for the P-VOL is detected after the ATTIME suspend time has elapsed, suspension will take place. In this case, data consistency is guaranteed, however, suspend processing might be delayed.

`GENID(`*generation-id*`)` ~ <2-digit hexadecimal number><<00>>

Applies to ShadowImage.

Specify a generation ID. The default value (used when this parameter is omitted) is `00`. Generation IDs can be used as a generation number used for identifying the generation of backups.

For example, generation IDs are useful when you need to maintain consistency between multiple storage systems. If you have specified different generation IDs for the volumes of individual storage systems each time you

set the ATTIME suspend time, all storage systems can be recovered from the same volumes that have the same generation ID when the storage systems are recovered.

CANCEL

Applies to ShadowImage.

If this parameter is used, the ATTIME suspend time is canceled. This parameter is valid for copy groups specified by consistency group ID.

When the copy type is ShadowImage and you do not use the UR ATTIME Suspend function, do not specify this parameter for a remote storage system or a copy group in which P-VOLs are Non Gen'ed volumes. The following table shows the operation when the ATTIME suspend time that has been set for the ShadowImage copy group is canceled:

Table 2-64 Operation when the ATTIME suspend time is canceled in ShadowImage

Target storage system or copy group	Setting of the ATTIME suspend time		Operation when the ATTIME suspend time is canceled	
	UR ATTIME suspend time	NORMAL ATTIME suspend time	UR ATTIME suspend time	NORMAL ATTIME suspend time
• Storage system that is not directly connected to a host • Copy group in which the P-VOLs are Non Gen'ed volumes	Specified	--	The UR ATTIME suspend time is canceled.	--
	--	Specified	--	The NORMAL ATTIME suspend time is not canceled because this operation cannot be performed.#
	Not specified	Not specified	The UR ATTIME suspend time is not canceled because it has not been set.#	The NORMAL ATTIME suspend time is not canceled because it has not been set.#
• Storage system that is directly connected to a host • Copy group which does not include Non Gen'ed volumes	Specified	--	The UR ATTIME suspend time is canceled.	--
	--	Specified	--	The NORMAL ATTIME suspend time is canceled.
	Not specified	Not specified	The UR ATTIME suspend time is not canceled because it has not been set.#	The NORMAL ATTIME suspend time is not canceled

Target storage system or copy group	Setting of the ATTIME suspend time		Operation when the ATTIME suspend time is canceled	
	UR ATTIME suspend time	NORMAL ATTIME suspend time	UR ATTIME suspend time	NORMAL ATTIME suspend time
				because it has not been set.#

Legend:

--: Not applicable

#

The return code is `0`.

PURGE

Applies to Universal Replicator.

When this is specified, the copy pair is suspended when a suspend request is issued, even if unsynchronized data remains. Unsynchronized data is managed by main control unit and remote control unit as differential data, and becomes a differential copy target when the copy pair is synchronized.

FLUSH

Applies to Universal Replicator.

Suspends the copy pair after all pending data is synchronized. Since the suspension is performed when data up until the time of the suspend request is synchronized, the system does not wait for updating to finish. Data updated after the suspend request is managed by main control unit and remote control unit as differential data, and becomes a differential copy target when the copy pair is synchronized.

QUICK

Applies to ShadowImage.

Suspends in the QUICK mode.

The S-VOL can be read or written even when data is being copied. When this parameter is not specified, the S-VOL can be read or written after data copying, and transition to the `SUSPOP` status have finished. For details on what happens when the `ATTIME` parameter is specified for the NORMAL ATTIME Suspend function, see the *ShadowImage for Mainframe User Guide*. When the UR ATTIME Suspend function is used, the method of performing suspensions used depends on the specified `ATOPT` parameter.

FORWARD

Applies to TrueCopy and Universal Replicator.

When the copy direction is forward

Places copy pairs in the SUSPOP status, so that the copy direction goes from the primary site to the secondary site after resynchronization.

When a storage system is VSP G1000, VSP G1500, VSP F1500, or VSP 5000 series and the copy type is TrueCopy or Universal Replicator, if you specify this parameter to a copy pair whose status is SWAPPING, the SWAPPING status is canceled, and the status of the copy pair changes to SUSPOP. Note that, for the Universal Replicator copy type, if you specify this parameter for a copy pair whose status was changed from a suspend status (SUSPOP, SUSPCU, or SUSPER) to the SWAPPING status, the status of the copy pair returns to the previous suspend status.

If this parameter is specified for Universal Replicator, the data synchronization method during the suspension will be the same as that used when the FLUSH parameter is specified.

When the copy direction is reverse

Places copy pairs in the SUSPOP status, so that the copy direction goes from the primary site to the secondary site after SWAPPING. If this parameter is specified for Universal Replicator, the data synchronization method during the suspension will be the same as that used when the FLUSH parameter is specified.

REVERSE

Applies to TrueCopy and Universal Replicator.

When the copy direction is forward

Places copy pairs in the SWAPPING status, so that the copy direction goes from the secondary site to the primary site after resynchronization. If this parameter is specified for Universal Replicator, the data synchronization method during the suspension will be the same as that used when the FLUSH parameter is specified.

When the copy direction is reverse

Places copy pairs in the SUSPOP status, so that the copy direction goes from the secondary site to the primary site after resynchronization.

When a storage system is VSP G1000, VSP G1500, VSP F1500, or VSP 5000 series and the copy type is TrueCopy or Universal Replicator, if you specify this parameter to a copy pair whose status is SWAPPING, the SWAPPING status is canceled, and the status of the copy pair changes to SUSPOP. Note that, for the Universal Replicator copy type, if you specify this parameter for a copy pair whose status was changed from a suspend status (SUSPOP, SUSPCU, or SUSPER) to the SWAPPING status, the status of the copy pair returns to the previous suspend status.

If this parameter is specified for Universal Replicator, the data synchronization method during the suspension will be the same as that used when the FLUSH parameter is specified.

When neither the FORWARD parameter nor the REVERSE parameter are specified, the status of copy pairs become SUSPOP. The status of the copy pair is not changed to SWAPPING. In addition, the SWAPPING status is not canceled.

SVOL({PROTECT|PERMIT})

Specify whether writing to the S-VOL is permitted or protected after a volume is suspended (SUSPOP).

When this parameter is not specified, the value specified in the ISPF panel is assumed. For SI copy pairs, if the ATTIME parameter or CANCEL parameter are both specified, this specification is disregarded, and writing to an S-VOL in the suspend status will be permitted.

When changing the status of a copy pair to SWAPPING or to a suspend status by canceling the SWAPPING status, specification of this parameter will be ignored, and the settings will permit writing to an S-VOL.

PROTECT

This value means that writing to the S-VOL is protected after a volume is suspended (SUSPOP).

PERMIT

This value means that writing to the S-VOL is permitted after a volume is suspended (SUSPOP).

DEVN(*p-vol-device-number*,*s-vol-device-number*) ~ <4-digit hexadecimal number, 4-digit hexadecimal number>

Specify the device number of the copy pair (P-VOL and S-VOL) to operate.

VOLUNIT

When this is specified, operation is performed by volume even when the environment supports operation by group.

Usually, to operate by volume only those copy pairs whose statuses do not match due to such reasons as failure, specify this along with the SELECT(COND) parameter.

SELECT({ALL|COND})

Specify the selection method for the copy pair to be manipulated by the command. When not specified, ALL is assumed.

ALL

All the copy pairs in the copy group are to be manipulated by the command. Note that if the DEVN parameter is specified, the copy pair specified for the parameter becomes the execution target of the command.

COND

The pairs to be manipulated by the command depend on their volume status. If all copy pairs in the copy group are either affected by the command or in the target status, processing terminates with return code 0. If copy pairs that are not affected by the command are included in the copy group, processing terminates with return code 4. For more information about copy groups affected by the command and its target status, see the table "Copy pair statuses for which commands with SELECT(COND) specified are subject to processing" in the *Hitachi Business Continuity Manager User Guide*.

Notes

- If more than one of the ATTIME, CANCEL, PURGE, FLUSH, QUICK, FORWARD, and REVERSE parameters is specified, the last specified parameter takes effect.
- The YKSUSPND command terminates successfully when the instruction to the copy pair succeeds. Even if the YKSUSPND command has terminated with return code 0, the copy pair might not be in the SUSPOP or SWAPPING status. Therefore, after you have executed the YKSUSPND command, use the YKQUERY or YKEWAIT command to make sure that the copy pair status has changed to SUSPOP or SWAPPING. If there is a volume with a status that has not been changed, re-execute the YKSUSPND command with the VOLUNIT parameter specified for all copy pairs.
- If operations with a REVERSE specification such as planned outage take place, to control TrueCopy from the script, we recommend that you specify the FORWARD or REVERSE parameter.
- After executing the YKSUSPND command, make sure that the statuses for all copy pairs in the copy group are transitioning to SUSPOP or SWAPPING, before executing the YKRESYNC command. If the YKRESYNC command is executed without checking this first, the copy directions in the copy group might become mixed-up, or transition to the correct status might not occur.
- If the ATTIME suspend function is used, no copy pair can be added to the copy pair. Execute the YKSUSPND command with the CANCEL parameter specified or the YKRESYNC command to cancel the ATTIME suspend time and then add a copy pair.
- To change the status of a copy pair in the SWAPPING status to a suspend status, execute the YKQUERY or YKEWAIT command, and then execute the YKSUSPND command. If you do not execute the YKQUERY or YKEWAIT command, the YKSUSPND command will terminate with return code 32.
- In some cases, the ShadowImage copy pair will not change to suspend status. This occurs if the ShadowImage copy pair, specified by the ATTIME suspend time, changes its status to soft fence before the ATTIME suspend time arrives, after which the soft fence status is reset after the ATTIME suspend time arrives. Execute the YKSUSPND command with the CANCEL parameter specified to cancel the ATTIME suspend time, and operate the copy pair as necessary.

If the soft fence status is reset before the ATTIME suspend time arrives, suspend is executed when the ATTIME suspend time arrives.

Return codes

The following table lists and describes the return codes of the YKSUSPND command.

Table 2-65 YKSUSPND command return code list

Return code	Meaning
-3	The module cannot be loaded. Possible causes are as follows: • The library dataset has not been linked. • The module is protected by the RACF program control function.
-1	An interruption occurred during execution.
0	The command completed normally.
4	Since a volume with an invalid status was found in the copy group, processing for the volume will be skipped.
32	• One or more I/O error was encountered. • A change in an I/O configuration definition was detected.
36	Invalid or missing data in a REXX variable.
40	An error occurred while a REXX variable was being written.
44	Termination due to invalid processing.
48	Termination due to invalid parameters. For example, there is the following cases: • When the ATTIME parameter and DEVN parameter are both specified. • When the ATTIME parameter and VOLUNIT parameter are both specified. • When a suspend that changes the copy direction for a Universal Replicator after resynchronization is performed with the VOLUNIT or DEVN parameter specified. • When the copy pair corresponding to the device number specified with the DEVN parameter is not found. • When the VOLUNIT parameter or DEVN parameter, and the PURGE parameter are specified for a Universal Replicator at the same time.
128	The command terminated abnormally. The user does not have permission to execute this command.

YKTIME command

Format

```
output-date-and-time-string = YKTIME([time-zone-of-the-output-date-
and-time-string],"input-date-and-time-string" [,time-zone-of-the-
input-date-and-time-string])
```

Function

This command is a REXX function called from a REXX script. This function converts the time zones of date and time strings.

The date and time string for which the time zone of the date and time string specified as the 2nd argument has been converted from the time zone set as the 3rd argument to the time zone set as the 1st argument is set as the special variable RESULT.

The time zone of the date and time string, *yyyymmdd* Δ *hh:mm:ss.uuuuuu*, in the 2nd argument is converted from the specified time zone format in the 3rd argument to the time zone format in the 1st argument, and the converted date and time string is set as the special variable RESULT.

Parameters

time-zone-of-the-output-date-and-time-string ~ {LOCAL|GMT}

`LOCAL`

Specify this value to convert the date and time string specified as the second argument to local time.

`GMT`

Specify this value to convert the date and time string specified as the second argument to GMT.

If you omit this parameter, the default value is `LOCAL`.

input-date-and-time-string~ *YYYYMMDD* Δ *hh*:*mm*:*ss*.*uuuuuu*

Specify the date and time to be converted. Specify the date in the Standard format and time in the Long format, separated by a space.

YYYY ~ <numeric characters>((1970-2042))

Specify the year of the date to be converted.

MM ~ <numeric characters>((01-12))

Specify the month of the date to be converted.

DD ~ <numeric characters>((01-31))

Specify the day of the date to be converted.

hh ~ <numeric characters>((00-23))

Specify the hour of the time to be converted.

mm ~ <numeric characters>((00-59))

Specify the minute of the time to be converted.

ss ~ <numeric characters>((00-59))

Specify the second of the time to be converted.

uuuuuu ~ <numeric characters>((000000-999999))

Specify the microsecond of the time to be converted.

time-zone-of-the-input-date-and-time-string ~ {LOCAL|GMT}

LOCAL

This value means that the time in the date and time string specified as the second argument is in local time.

GMT

This value means that the time in the date and time string specified as the second argument is in GMT.

If you omit this parameter, the default value is LOCAL.

Notes

The local time is the time returned by the standard REXX function TIME.

Return codes

If the command finishes normally, the converted date and time string (*YYYYMMDD* Δ *hh*:*mm*:*ss*.*uuuuuu*) is set.

If conversion fails because, for example, there is a mistake in the parameters, the NULL string is set.

Example

The following is an example of converting the current time to GMT time.

```
gmt_time = YKTIME("GMT",DATE('S')" "TIME('L'),"LOCAL");
```

YKVFCGCT command

Format

YKVFCGCT

Δ$_1$PREFIX(*prefix*)

Δ$_1$DAD(*dad-id*)

Δ$_1$GROUP1(*copy-group-ID-1*)

Δ$_1$GROUP2(*copy-group-ID-2*)

[Δ$_1$GROUP3(*copy-group-ID-3*)]

[Δ$_1$ROUTE(*route-list-ID*[,{*route-label*|*}])]

[Δ$_1$TOPOLOGY({CASCADE|MT|DELTA})]

Function

This command is a REXX script.

This command loads multiple copy group definition files that compose the Cascade, Multi-Target, and Delta Resync configurations by using the `YKLOAD` command and verifies the consistency between the copy group definitions. If any inconsistency is found, the command outputs that information to the TSO/E terminal.

For details about the content that is verified, see the description of "Consistency check between copy group definitions and copy pair configurations" in the *Hitachi Business Continuity Manager User Guide*.

Parameters

`PREFIX(`*prefix*`)` ~ <PREFIX string>

Specify the configuration file prefix.

`DAD(`*dad-id*`)` ~ <DAD string>

Specify the device address domain ID (local device address domain ID) of the current host.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

`GROUP1(`*copy-group-ID-1*`)` ~ <GROUP string>

Specify the copy group ID of the first copy group definition file that is to be verified.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

`GROUP2(`*copy-group-ID-2*`)` ~ <GROUP string>

Specify the copy group ID of the second copy group definition file that is to be verified.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

`GROUP3(`*copy-group-ID-3*`)` ~ <GROUP string>

Specify the copy group ID of the third copy group definition file that is to be verified.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

`ROUTE(`*route-list-ID*`[,{`*route-label*`|*}])`

Specify the route list ID that is required for loading the copy group definition file specified in the `GROUP1`, `GROUP2`, or `GROUP3` parameters.

route-list-ID ~ <ROUTE string of 8 or fewer characters>

Specify the route list ID.

{*route-label*|*} ~ <ROUTELABEL string of 8 or fewer characters>

When you specify a route label, the information about the command devices with the specified route label is loaded. If * is specified, the information for all command devices is loaded.

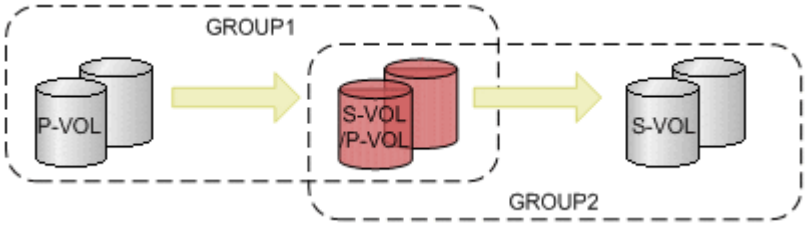
If both the route label and * are omitted, the information about the command devices with no route label is loaded.

TOPOLOGY({CASCADE|MT|DELTA})

Specify the topology for the configuration. The default value is CASCADE.

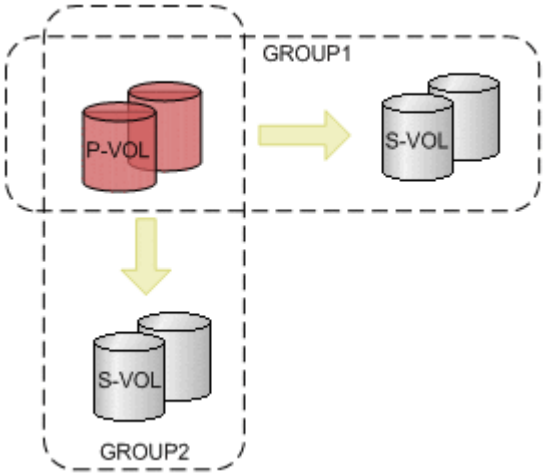
CASCADE

Verifies the consistency between the S-VOL configuration of the copy group definition file specified in the GROUP1 parameter and the P-VOL configuration of the copy group definition file specified in the GROUP2 parameter.



MT

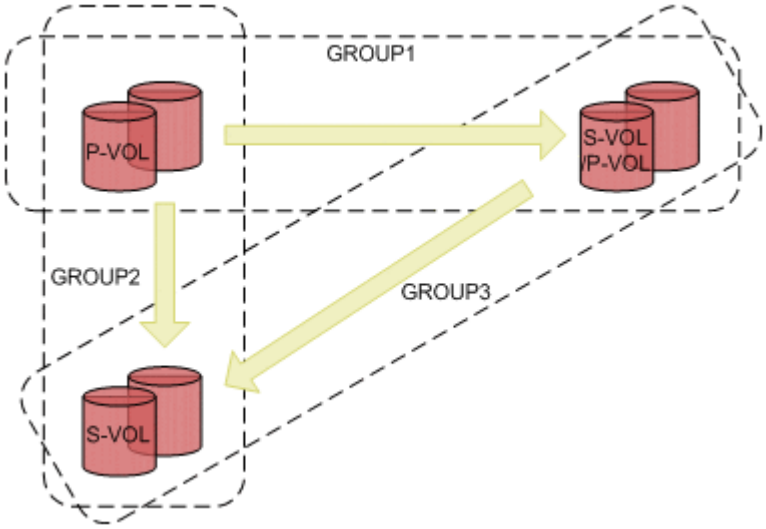
Verifies the consistency between the P-VOL configuration of the copy group definition file specified in the GROUP1 parameter and the P-VOL configuration of the copy group definition file specified in the GROUP2 parameter.



DELTA

Verifies the following three configurations:

- The consistency between the P-VOL configuration of the copy group definition file specified in the `GROUP1` parameter and the P-VOL configuration of the copy group definition file specified in the `GROUP2` parameter
- The consistency between the S-VOL configuration of the copy group definition file specified in the `GROUP1` parameter and the P-VOL configuration of the copy group definition file specified in the `GROUP3` parameter
- The consistency between the S-VOL configuration of the copy group definition file specified in the `GROUP2` parameter and the S-VOL configuration of the copy group definition file specified in the `GROUP3` parameter



Return codes

The following table lists and describes the return codes of the `YKVFCGCT` command.

Table 2-66 YKVFCGCT command return code list

Return code	Meaning
0	A problem does not exist in the definition.
8	A problem exists in the definition.
32	A processing error occurred during command execution.
48	Termination due to invalid parameters.

Output example

The following are output examples of the `YKVFCGCT` command:

When a problem does not exist in the definition

```
READY
YKVFCGCT PREFIX(BC) DAD(DADP) GROUP1(CGTC) GROUP2(CGUR) ROUTE(RLT1)
YKL099I YKLOAD command return code=0, reason code=0.
YKL099I YKLOAD command return code=0, reason code=0.
YKZ099I YKVFCGCT command return code=0000, reason code=0000
READY
```

When inconsistencies exist in the definition

```
READY
YKVFCGCT PREFIX(BC) DAD(DADP) GROUP1(CGTC) GROUP2(CGUR) ROUTE(RLT1)
YKL099I YKLOAD command return code=0, reason code=0.
YKL099I YKLOAD command return code=0, reason code=0.
The number of copy pairs in CGTC and CGUR is not equal.
The volume (SN=10007, CU=20, CCA=0A) is not defined in CGUR.
The number of volumes included in the C/T group (C/T=11) of CGTC and the number of volumes
included in the journal group (M-JNL=01, R-JNL=01, MIRROR=1) of CGUR are not equal.
YKZ099I YKVFCGCT command return code=0008, reason code=0000
READY
```

YKWATCH command

Applies to ShadowImage, TrueCopy, and TrueCopy with the HyperSwap attribute.

Format

YKWATCH

Δ_1PREFIX(*prefix*)

Δ_1GROUP(*copy-group-id*)

Δ_1GOTO({DUPLEX|SUSPEND|SIMPLEX})

Δ_1TIMEOUT(*timeout-value*)

Δ_1DAD(*dad-id*)

[Δ_1{USER({*user-id*|*}|OPERATOR(*route-code*)|CN({*console-name*|INTERNAL})}]

Function

This command is a REXX script.

This command monitors the copy pair status transition for a specified copy group and sends a notification message when all the copy pairs have been placed in a specified status.

Parameters

PREFIX(*prefix*) ~ <PREFIX string>

Specify the configuration file prefix.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

GROUP(*copy-group-id*) ~ <GROUP string>

Specify the copy group ID of the copy group to be monitored.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

GOTO({DUPLEX|SUSPEND|SIMPLEX})

Specify the status of the copy group to be monitored. When all the copy pairs in the group change to the specified status, the YKWATCH command terminates successfully.

DUPLEX

The command waits until all the copy pairs in the group reach the DUPLEX status. When any copy pair takes a status other than PENDING or DUPLEX, however, the YKWATCH command terminates abnormally with the return code 8.

SUSPEND

The command waits until all the copy pairs in the group reach the SUSPOP status. However, if the status of any copy pair changes to a status other than a suspend status (SUSPOP, SUSPCU, or SUSPER) or TRANS, the YKWATCH command terminates abnormally with return code 8.

SIMPLEX

The command waits until the copy pairs attain the SIMPLEX status. When any copy pair attains a status other than SIMPLEX, however, the YKWATCH command terminates abnormally with the return code 8.

TIMEOUT(*timeout-value*) ~ <numeric characters> ((1-16666666))

Specify a timeout value in minutes. After the time specified with this value has elapsed, the YKWATCH command terminates abnormally with the return code 4.

DAD(*dad-id*) ~ <DAD string>

Specify the local device address domain ID to be monitored.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

USER({*user-id*|*}) ~ <User ID string (for user ID)>

Specifies the terminal to which messages issued by the YKWATCH command are transmitted.

user-id

Transmits the messages to the terminal with the user ID specified in the parameter.

*

Transmits the messages to the terminal of the user executing the script.

OPERATOR(*route-code*) ~ <numeric characters> ((0-127))

Transmits the messages issued by the YKWATCH command to the operator with the address code specified in the parameter.

CN({*console-name*|INTERNAL}) ~ <console name string from 2 to 8 characters> (for a console name)

Specifies the operator console queue in which the messages issued by the YKWATCH command are placed.

console-name

Places the messages in the operator console queue with the console ID specified in the parameter.

INTERNAL

Sends the messages to the active console in which INTIDS=Y is defined.

Notes

- In some configurations such as when TrueCopy and ShadowImage share volumes or a 1 to *n* (*n* is greater than 2) configuration of ShadowImage, the status transitions of each copy pair might not be correctly monitored.
- When using a copy pair on a remote site (a site that is not channel-connected directly from the local host), the YKWATCH command cannot monitor the status transition of the copy pair on the remote site. Use the YKEWAIT command.
- When using a Universal Replicator copy pair, the YKWATCH command cannot monitor the status transition of the Universal Replicator copy pair. Use the YKEWAIT command.
- Execute the YKWATCH command when device numbers are assigned for P-VOLs of all copy pairs in the copy group specified in the GROUP parameter, and when the P-VOLs are online.
- The YKWATCH command cannot monitor Non Gen'ed volumes.
- The YKWATCH command cannot monitor the transition to the CONSLOST status. Use the YKEWAIT command.
- To monitor copy groups in a 3DC Multi-Target (TCxTC) configuration, the SSIDs of the S-VOLs in one copy group must be different from the SSIDs of the S-VOLs in the other copy group. If the same SSID exists in different copy groups, you cannot monitor the status transition of the copy pairs.

Return codes

The following table lists and describes the return codes of the `YKWATCH` command.

Table 2-67 YKWATCH command return code list

Return code	Meaning
0	The command completed normally.
4	A timeout or interrupt occurred before the volume status changes to the requested volume status.
8	A copy pair or copy pairs in the specified group are placed in the status from which the required status is not reachable.
12	Cannot wait for the status transition, because there is a copy pair with a P-VOL of which is offline in the specified group.
44	Termination due to invalid processing.
48	Termination due to invalid parameters.

YKWTOMSG command

Format

When outputting a single line message

```
YKWTOMSG(type,text)
```

When outputting a multi-line message

```
YKWTOMSG(type,
text-1,
text-2
[,text-3]
[,text-4]
[,text-5]
[,text-6]
[,text-7]
[,text-8]
[,text-9]
[,text-10])
```

Function

This is a REXX function that is called from within a REXX script.

This command outputs the specified message ID and message text to the console.

Parameters

type

Specify the type of message to be output. This is designated by a routing code that corresponds to the specified type:

`I`

A message that reports information. The message is output in by using the routing code `11`.

`W`

A warning message. The message is output by using the routing code `6`.

`E`

An error message. The message is output by using the routing code `6`.

text ~ <string of 125 or fewer characters>

Use this parameter when you want to output a single line message. For this parameter, specify the message ID and message text of the message that you want to output.

text-1 ~ <string of 34 or fewer characters>

Use this parameter when you want to output a multi-line message. For this parameter, specify the message ID and the first line of the text of the message that you want to output.

text-2 ~ <string of 70 or fewer characters>

Use this parameter when you want to output a multi-line message. For this parameter, specify the second line of the text that you want to output.

text-3 through *text-10* ~ <string of 70 or fewer characters>

Use these parameters when you want to output more than two lines for a message. The specification method is the same as for the *text-2* parameter.

Note

For a multi-line message, the message text can be output to a maximum of 10 lines.

Return codes

The following table lists and describes the return codes of the `YKWTOMSG` command.

Table 2-68 YKWTOMSG command return code list

Return code	Meaning
0	The command completed normally.
1000	The caller is not a REXX environment (environment error).
1004	The *type* parameter is not specified.
1008	The specified *type* parameter is invalid.
1012	The *text* parameter is not specified.
1016	The specified *text* parameter is invalid.
2000	A system error occurred.
Other than above	Refer to the return code of the WTO macro. For details, see the IBM manual *MVS Programming: Assembler Services Reference*.

YKWTOR command

Format

```
YKWTOR("reply_var","msg_text"[,timeout_value])
```

Function

This command is a REXX function called from REXX scripts.

This command outputs the specified message text to a console, and then waits for a response from an operator. The command also sets a response message that is input into the console to the REXX variable.

Parameters

reply_var ~ <REXX variable name string of 1 to 250 characters>

Specify the name of the REXX variable that stores the response message that was entered by the operator on the console.

msg_text ~ <string of 1 to 122 characters>

Specify the message text to be output to the console.

Output the message by using the routing code 1 and the descriptor code 7.

timeout_value ~ <numeric characters> ((1 - 357913))

Specify the wait time for response messages in minutes. If this parameter is omitted, the timeout will not be set, and the command will wait indefinitely for a response message from the operator.

Note

The length of response message that the operator can input into a console is 1 to 119 characters. If a message exceeds 119 characters, the `IEE700I` message will be output, and the response message will be ignored.

Return codes

The following table lists and describes the return codes of the `YKWTOR` command.

Table 2-69 YKWTOR command return code list

Return code	Meaning
`-4`	Processing ended because of a time-out.
`0`	The command completed normally.
`1000`	The caller is not a REXX environment (environment error).
`1004`	The *reply_var* parameter is not specified.
`1008`	The specified *reply_var* parameter is invalid.
`1012`	The *msg_text* parameter is not specified.
`1016`	The specified *msg_text* parameter is invalid.
`1020`	The specified *timeout_value* parameter is invalid.
`2000`	An error occurred while a REXX variable was being written.
`3000`	A system error occurred.
Other than the above	Refer to the return code of the `WTO` macro. For details, see the IBM manual *MVS Programming: Assembler Services Reference*.

3

Data objects

This chapter describes the configuration file dataset formats and required disk capacity, the XML document type definitions, and REXX variable structures.

Names of configuration files

Running Business Continuity Manager data objects exist as REXX variable structures. For details about these data objects, see REXX variable structures on page 3-24.

Business Continuity Manager data objects that are not running exist as XML format files (Configuration files) in disks. For details about the XML format, see XML document type definitions on page 3-6.

Conversion from the configuration files to the REXX variables is executed by the `YKLOAD` command. Conversion from the REXX variables to the configuration files is executed by the `YKSTORE` command.

The following table lists the names of the configuration files:

Table 3-1 Names of the configuration files

File type	File name
Copy group definition file	*prefix*.`GRP`.*copy-group-ID*
Disk configuration definition file	*prefix*.`DSK`.`SN`*nnnnn*.*device-address-domain-ID*
Route list definition file	*prefix*.`ROUTE`.*route-list-ID*
Command device definition file	*prefix*.`CDEV`.*device-address-domain-ID*
Path set definition file	*prefix*.`PATH`.*path-set-ID*

Note:

- *prefix* must be the same in the operation scope of the copy group.
- *nnnnn* is the serial number of a detected storage system.
- *device-address-domain-ID* is the ID for the device address domain in which a storage system is detected.

The following table describes the maximum length and characters that can be specified for the items of the configuration file names.

Table 3-2 Maximum length and characters that can be specified for the items of the configuration file names

Item	Maximum length	Specifiable characters
Prefix	• When using the configuration file by the ISPF panel: 16 • When using the configuration file by a CLI command: 25[#1]	A string consisting of one or more parts, joined by periods (.). Each part can contain from one to eight uppercase alphanumeric characters. The first character of each part must be an uppercase alphabetic character.
Copy group ID	44 - (5 + *prefix-length*) [#2]	
Device address domain ID	44 - (13 + *prefix-length*), or 28, whichever is smaller	
Route list ID	8	

Item	Maximum length	Specifiable characters
Path set ID	44 - (6 + *prefix-length*)	

#1: When using the extended access control function, the maximum length specifiable for the prefix is 18 characters.

#2: When using the extended access control function, the maximum length specifiable for the copy group ID is 15 characters.

Tip

In the cases below, the temporary files will be created when the configuration file is created or updated. These files will be deleted after the disk configuration definition file is successfully created or updated. For this reason, do not create datasets that will have the same names as the temporary files.

- The configuration file is created or updated by specifying **2. Realloc** for **Configuration update** in the Set Defaults panel.
- The copy group definition file is created or updated by specifying `REALLOC` for the `CFGUPDTE` parameter for the `YKH2B` command or the `YKIMPORT` command.
- The disk configuration definition file is created or updated by using `YKBTSCAN`.

The following table shows the names of the temporary files for the configuration file.

Table 3-3 Names of the temporary files for the configuration file

Configuration file type	Temporary file name
Copy group definition file	• *prefix*.`NEW`.*copy-group-ID* • *prefix*.`OLD`.*copy-group-ID*
Disk configuration definition file	• *prefix*.`NEW.SN`*nnnnn*.*device-address-domain-ID* • *prefix*.`OLD.SN`*nnnnn*.*device-address-domain-ID*
Route list definition file	• *prefix*.`NEWRT`.*route-list-ID* • *prefix*.`OLDRT`.*route-list-ID*
Command device definition file	• *prefix*.`NEWC`.*device-address-domain-ID* • *prefix*.`OLDC`.*device-address-domain-ID*
Path set definition file	• *prefix*.`NEWP`.*path-set-ID* • *prefix*.`OLDP`.*path-set-ID*

Dataset formats and required disk capacity for the configuration file

This section describes the dataset formats and required disk capacity for the configuration file. The following table describes the meaning of the symbols used in the formulas.

Table 3-4 Meaning of the symbols used in the formulas

Symbol	Meaning
A	Number of copy groups included in the copy group definition file
B	Number of copy pairs included in the copy group definition file
C	Size to be increased when the EXCTG attribute is defined. For details about formulas used for calculating the size to be increased, see Table 3-7 Size to be increased when a condition is satisfied on page 3-6.
D	Size to be increased when the `YKSTORE` command is used in a script. For details about formulas used for calculating the size to be increased, see Table 3-7 Size to be increased when a condition is satisfied on page 3-6.
E	Number of volumes included in the disk configuration definition file
F	Number of routes included in the route list definition file
G	Number of storage systems defined in the routes included in the route list definition file
H	Number of command devices included in the command device definition file
I	Total number of inter-control unit logical paths and inter-disk controller logical paths that are included in the path set definition file
J	Number of digits in the number of copy pairs included in the copy group definition file
K	Number of command device groups included in the command device definition file

The following table lists the dataset formats of the configuration file.

Table 3-5 Configuration file dataset format

Type of the configuration file	DSORG	RECFM	LRECL	BLKSIZE (bytes)
Copy group definition file	PS	VB	256	4,096
Disk configuration definition file	PS	VB	256	4,096
Route list definition file	PS	VB	256	4,096
Command device definition file	PS	VB	256	4,096
Path set definition file	PS	VB	256	4,096

Note: The configuration files are only for reference. If the configuration files are changed, correct operation cannot be guaranteed.

The following table lists the required disk capacity for the configuration file.

Table 3-6 Required disk capacity for the configuration file

Type of the configuration file	Size (bytes)
Copy group definition file	600 + *A*×710 + *B*×230 + *C* + *D*
Disk configuration definition file	500 + *E*×180
Route list definition file	400 + *F*×90 + *G*×90
Command device definition file	400 + *H*×200 +*K*×200
Path set definition file	300 + *I*×1,240

Tip: In the cases below, the temporary files will be created when the configuration file is created or updated. Make sure that there is enough space for these files.

- The configuration file is created or updated by specifying **2. Realloc** for **Configuration update** in the Set Defaults panel.
- The copy group definition file is created or updated by specifying `REALLOC` for the `CFGUPDTE` parameter for the `YKH2B` command or the `YKIMPORT` command.
- The disk configuration definition file is created or updated by using `YKBTSCAN`.

Be sure to take into consideration that, if the characters in the following table are included in the volume serial number of a volume that will be scanned or in the **Description** item of the ISPF panel, then the required disk capacity will increase according to the number of included characters.

Character	Size to be increased for each character specified (bytes)
>	3
<	3
"	5
'	5
&	4

Table 3-7 Size to be increased when a condition is satisfied

No.	Type of the configuration file	Condition for the size to be increased	Size to be increased (bytes)
1	Copy group definition file	The EXCTG attribute has been defined.	400 + *A*×210
2	Copy group definition file	The `YKSTORE` command has been used in the script.	400 + *J*×16 + *A*×(2,760 + *J*×16) + *B*×90

XML document type definitions

Business Continuity Manager operates under z/OS®. The character code for the z/OS® system is EBCDIC, which requires an XML header such as the one below.

```
<?xml version="1.0" encoding="ebcdic-cp-us"?>
```

Note: If a file exists in an ASCII character coding, the header must be rewritten as shown below.

```
<?xml version="1.0" encoding="UTF-8"?>
```

The element names, attribute names, and attribute values are case sensitive during configuration file read processing in Business Continuity Manager.

API Information

All XML data objects in Business Continuity Manager should be within the APIInfo elements.

The XML data objects described here are valid within the APIInfo elements with the attribute Level= "`9.8.0`".

```
<!ELEMENT APIInfo(CopyGroupContainer|HostDiscoveredArray|
RouteList|CDEVContainer|CDEVGRP|Paths)>
<!ATTLIST APIInfo
  Level                (9.8.0)#REQUIRED
```

```
  UpdateID            CDATA#IMPLIED
>
```

The following table gives the meaning of the attribute of the `APIInfo` elements.

Attribute name	Meaning
`Level`	API level
`UpdateID`	Last update ID

Disk Device

```
<!ELEMENT DiskDevice (EMPTY)>
<!ATTLIST DiskDevice
  SerialNum           CDATA#REQUIRED
  CUNum               CDATA#IMPLIED
  SSID                CDATA#IMPLIED
  CCA                 CDATA#IMPLIED
  Cyls                CDATA#IMPLIED
  External            (Y|N)#IMPLIED
>
```

The following table gives the meanings of the attributes of the `DiskDevice` elements.

Attribute name	Meaning
`SerialNum`	Storage system serial number
`CUNum`	Control unit number
`SSID`	SSID
`CCA`	Command Control Address
`Cyls`	Volume capacity
`External`	External volume information

Copy Pair Status

```
<!ELEMENT PairState (EMPTY)>
<!ATTLIST PairState
  State                (SIMPLEX|DUPLEX|PENDING|SUSPOP|SUSPCU|
                       SUSPVS|SUSPER|REVRSY|INVALID|TRANS|
                       SWAPPING|HOLD|HOLDER|CHKJNL|HOLDTRNS|
                       NODELTA|CONSLOST)#IMPLIED
  CTDelta              CDATA#IMPLIED
  MatchingPerCent      CDATA#IMPLIED
  Reversed             CDATA#IMPLIED
>
```

The following table gives the meanings of the attributes of the `PairState` elements.

Attribute name	Meaning
`State`	Copy pair status
`CTDelta`	C/T delta value

Attribute name	Meaning
MatchingPerCent	Copy pair matching rate
Reversed	Whether direction is reverse from Secondary to Primary

Copy Pair

```
<!ELEMENT CopyPair (PairState,DiskDevice,DiskDevice)>
```

TrueCopy Option

```
<!ELEMENT TC_Options (EMPTY)>
<!ATTLIST TC_Options
  GroupID             CDATA#IMPLIED
  FenceLevel          (DATA|STATUS|NEVER)#REQUIRED
  FreezeScpMode       (Y|N)#IMPLIED
  TimeStampMode       (Y|N)#IMPLIED
  Map                 (CYL|TRK)#IMPLIED
  OpenMF              (Y|N)#IMPLIED
>
```

The following table gives the meanings of the attributes of the TC_Options elements.

Attribute name	Meaning
GroupID	Consistency group ID
FenceLevel	Handling of P-VOL after suspending
FreezeScpMode	When Y, makes SCP if SUSPER
TimeStampMode	When Y, the timestamp transfer mode is enabled.
Map	Difference management unit
OpenMF	When Y, the Open/MF Consistency Preservation function is used.

ShadowImage Option

```
<!ELEMENT SI_Options (EMPTY)>
<!ATTLIST SI_Options
  GroupID             CDATA#IMPLIED
  PresetMode          (NORMAL|UR)#IMPLIED
  AttimeSplitMode     (STEADY|QUICK)#IMPLIED
>
```

The following table gives the meanings of the attributes of the SI_Options elements.

Attribute name	Meaning
GroupID	Consistency group ID
PresetMode	Whether to use the UR ATTIME Suspend function
AttimeSplitMode	Suspend mode used by the UR ATTIME Suspend function.

Attribute name	Meaning
	(This indicates whether secondary volumes transitioning to the suspend status can be accessed or updated.)

Universal Replicator Option

```
<!ELEMENT UR_Options (EMPTY)>
<!ATTLIST UR_Options
  GroupID             CDATA#REQUIRED
  subGroupID          CDATA#REQUIRED
  MirrorID            (0|1|2|3)#REQUIRED
  ErrorLevel          (GROUP|VOLUME)#IMPLIED
  CTTimeMode          (JOURNAL|VOLUME|ASIS)#IMPLIED
  PathID              CDATA#IMPLIED
>
```

The following table gives the meanings of the attributes of the `UR_Options` elements.

Attribute name	Meaning
`GroupID`	Master journal group ID
`subGroupID`	Restore journal group ID
`MirrorID`	Mirror ID
`ErrorLevel`	Unit for suspending Universal Replicator copy pairs
`CTTimeMode`	Consistency time mode
`PathID`	Path group ID

Related

```
<!ELEMENT Related (EMPTY)>
<!ATTLIST Related
  CopyGroupID         ID#REQUIRED
  Type                (CCFROM|MTOF|REVERSE|RSI)#REQUIRED
>
```

The following table gives the meanings of the attributes of the `Related` elements.

Attribute name	Meaning
`CopyGroupID`	Related ID
`Type`	Related type

DKCState

```
<!ELEMENT DKCState (EMPTY)>
<!ATTLIST DKCState
  SerialNum           CDATA#REQUIRED
  WPR_All             CDATA#REQUIRED
  RSF_All             CDATA#REQUIRED
  RSF_CT              CDATA#REQUIRED
  JNL_Meta            CDATA#REQUIRED
```

```
  JNL_Data             CDATA#REQUIRED
  JNL_Trfr             CDATA#REQUIRED
  JNL_Cache_Capacity   CDATA#REQUIRED
  JNL_Data_Capacity    CDATA#REQUIRED
>
```

The following table gives the meanings of the attributes of the `DKCState` elements.

Attribute name	Meaning
`SerialNum`	Storage system serial number
`WPR_All`	Write pending rate
`RSF_All`	Reserve sidefile cache-usage rate
`RSF_CT`	Reserve sidefile cache-usage rate for C/T
`JNL_Meta`	Metadata usage rate in the journal volume
`JNL_Data`	Journal data usage rate in the journal volume
`JNL_Trfr`	Operating information between journal groups
`JNL_Cache_Capacity`	Cache capacity in the journal volume (GB)
`JNL_Data_Capacity`	Data capacity in the journal volume (GB)

RelatedDKCState

```
<!ELEMENT RelatedDKCState (DKCState,DKCState)>
<!ATTLIST RelatedDKCState
  Sidefile_Threshold  CDATA#REQUIRED
  Offload_Timer       CDATA#REQUIRED
  RCU_Ready_Timer     CDATA#REQUIRED
  Copy_Pending_Timer  CDATA#REQUIRED
  MCU_TO_RCU_KBPS     CDATA#REQUIRED
>
```

The following table gives the meanings of the attributes of the `RelatedDKCState` elements.

Attribute name	Meaning
`Sidefile_Threshold`	Sidefile threshold
`Offload_Timer`	Offloading timer
`RCU_Ready_Timer`	Remote control unit ready timer
`Copy_Pending_Timer`	Copy pending timer
`MCU_TO_RCU_KBPS`	Data transmission speed between main control unit-remote control unit (Kbps)

Copy Group

```
<!ELEMENT CopyGroup ((TC_Options|SI_Options|UR_Options),

Related?,RelatedDKCState*,CopyPair*,ExctgDefDKC?)>
<!ATTLIST CopyGroup
  ID                  ID#REQUIRED
  PrimaryDADID        ID#REQUIRED
```

```
  SecondaryDADID      ID#REQUIRED
  SimplexCt           CDATA#IMPLIED
  DuplexCt            CDATA#IMPLIED
  PendingCt           CDATA#IMPLIED
  RevresyncCt         CDATA#IMPLIED
  SuspendOpCt         CDATA#IMPLIED
  SuspendVSCt         CDATA#IMPLIED
  SuspendCuCt         CDATA#IMPLIED
  SuspendErCt         CDATA#IMPLIED
  SwappingCt          CDATA#IMPLIED
  TransitionCt        CDATA#IMPLIED
  InvalidCt           CDATA#IMPLIED
  ReversedCt          CDATA#IMPLIED
  HoldCt              CDATA#IMPLIED
  HoldErCt            CDATA#IMPLIED
  ChkJnlCt            CDATA#IMPLIED
  HoldTrnsCt          CDATA#IMPLIED
  NoDeltaCt           CDATA#IMPLIED
  ConslostCt          CDATA#IMPLIED
  CurrentTime         CDATA#IMPLIED
  MatchingPerCent     CDATA#IMPLIED
  InitPace            (SLOW|NORMAL|FAST)#IMPLIED
  ProtectMode         (PROTECT|PERMIT)#REQUIRED
  LinkageOption       (NONE|HS)#IMPLIED
  PrimarySCHSET       CDATA#IMPLIED
  SecondarySCHSET     CDATA#IMPLIED
>
```

The following table gives the meanings of the attributes of the `CopyGroup` elements.

Attribute name	Meaning
`ID`	Copy group ID
`PrimaryDADID`	Primary device address domain ID
`SecondaryDADID`	Secondary device address domain ID
`SimplexCt`	`SIMPLEX` count
`DuplexCt`	`DUPLEX` count
`PendingCt`	`PENDING` count
`RevresyncCt`	`REVRSY` count
`SuspendOpCt`	`SUSPOP` count
`SuspendVSCt`	`SUSPVS` count
`SuspendCuCt`	`SUSPCU` count
`SuspendErCt`	`SUSPER` count
`SwappingCt`	`SWAPPING` count
`TransitionCt`	`TRANS` count
`InvalidCt`	`INVALID` count
`ReversedCt`	Count of copy pairs with reverse direction from Secondary to Primary

Attribute name	Meaning
HoldCt	HOLD count
HoldErCt	HOLDER count
ChkJnlCt	CHKJNL count
HoldTrnsCt	HOLDTRNS count
NoDeltaCt	NODELTA count
ConslostCt	CONSLOST count
CurrentTime	Current time in local time
MatchingPerCent	Copy pair matching rate
InitPace	Copy pace
ProtectMode	Protect mode
LinkageOption	Linkage option
PrimarySCHSET	Primary subchannel set ID
SecondarySCHSET	Secondary subchannel set ID

Copy Group Container

```
<!ELEMENT CopyGroupContainer (ExctgDef?,CopyGroup*)>
<!ATTLIST CopyGroupContainer
  ContainerID         ID#REQUIRED
  Format              (SIMPLE)#IMPLIED
  Description         CDATA#IMPLIED
  MatchingPerCent     CDATA#IMPLIED
  SimplexCt           CDATA#IMPLIED
  PendingCt           CDATA#IMPLIED
  DuplexCt            CDATA#IMPLIED
  TransitionCt        CDATA#IMPLIED
  SuspendCuCt         CDATA#IMPLIED
  SuspendOpCt         CDATA#IMPLIED
  SuspendVSCt         CDATA#IMPLIED
  SuspendErCt         CDATA#IMPLIED
  InvalidCt           CDATA#IMPLIED
  SwappingCt          CDATA#IMPLIED
  RevresyncCt         CDATA#IMPLIED
  ReversedCt          CDATA#IMPLIED
  HoldCt              CDATA#IMPLIED
  HoldErCt            CDATA#IMPLIED
  ChkJnlCt            CDATA#IMPLIED
  HoldTrnsCt          CDATA#IMPLIED
  NoDeltaCt           CDATA#IMPLIED
  ConslostCt          CDATA#IMPLIED
  ExctgEnable         (0|1)#IMPLIED
>
```

The following table gives the meanings of the attributes of the `CopyGroupContainer` elements.

Attribute name	Meaning
ContainerID	Copy group ID
Format	When SIMPLE, indicates the copy group structure earlier than version 2.0.
Description	Descriptions added by the user
MatchingPerCent	Copy pair matching rate
SimplexCt	SIMPLEX count
PendingCt	PENDING count
DuplexCt	DUPLEX count
TransitionCt	TRANS count
SuspendCuCt	SUSPCU count
SuspendOpCt	SUSPOP count
SuspendVSCt	SUSPVS count
SuspendErCt	SUSPER count
InvalidCt	INVALID count
SwappingCt	SWAPPING count
RevresyncCt	REVRSY count
ReversedCt	Count of copy pairs with reverse direction from Secondary to Primary
HoldCt	HOLD count
HoldErCt	HOLDER count
ChkJnlCt	CHKJNL count
HoldTrnsCt	HOLDTRNS count
NoDeltaCt	NODELTA count
ConslostCt	CONSLOST count
ExctgEnable	Whether to use the EXCTG function

ExctgDef

```
<!ELEMENT ExctgDef(EX_DefInfo)>
```

EX_DefInfo

```
<!ELEMENT EX_DefInfo(EMPTY)>
<!ATTLIST EX_DefInfo
  FwdEnable           (0|1)#IMPLIED
  RevEnable           (0|1)#IMPLIED
  FwdExctgID          CDATA#IMPLIED
  RevExctgID          CDATA#IMPLIED
  FwdSuper_Model      CDATA#IMPLIED
  RevSuper_Model      CDATA#IMPLIED
  FwdSuper_SerialNum  CDATA#IMPLIED
```

```
  RevSuper_SerialNum  CDATA#IMPLIED
>
```

The following table gives the meanings of the attributes of the `EX_DefInfo` elements.

Attribute name	Meaning
`FwdEnable`	Whether to use the EXCTG function during a forward operation
`RevEnable`	Whether to use the EXCTG function during a reverse operation
`FwdExctgID`	EXCTG ID during a forward operation
`RevExctgID`	EXCTG ID during a reverse operation
`FwdSuper_Model`	Supervisor disk controller model during a forward operation
`RevSuper_Model`	Supervisor disk controller model during a reverse operation
`FwdSuper_SerialNum`	Supervisor disk controller serial number during a forward operation
`RevSuper_SerialNum`	Supervisor disk controller serial number during a reverse operation

ExctgDefDKC

```
<!ELEMENT ExctgDefDKC(EX_DefDKC)>
```

EX_DefDKC

```
<!ELEMENT EX_DefDKC(EMPTY)>
<!ATTLIST EX_DefDKC
  FwdModel            CDATA#IMPLIED
  RevModel            CDATA#IMPLIED
  FwdSerialNum        CDATA#IMPLIED
  RevSerialNum        CDATA#IMPLIED
  FwdArbCmdNo         CDATA#IMPLIED
  RevArbCmdNo         CDATA#IMPLIED
>
```

The following table gives the meanings of the attributes of the `EX_DefDKC` elements.

Attribute name	Meaning
`FwdModel`	Storage system model during a forward operation
`RevModel`	Storage system model during a reverse operation
`FwdSerialNum`	Storage system serial number during a forward operation
`RevSerialNum`	Storage system serial number during a reverse operation
`FwdArbCmdNo`	Arbitration command device number during a forward operation

Attribute name	Meaning
RevArbCmdNo	Arbitration command device number during a reverse operation

Host-Addressed Disk Device

```
<!ELEMENT HostAddressedDisk (DiskDevice)>
<!ATTLIST HostAddressedDisk
  SCHSET              CDATA#IMPLIED
  Devn                CDATA#IMPLIED
  Volser              CDATA#IMPLIED
>
```

The following table gives the meanings of the attributes of the `HostAddressedDisk` elements.

Attribute name	Meaning
SCHSET	Subchannel set ID
Devn	Device number
Volser	Volume serial number

SoftwareKeys

```
<!ELEMENT SoftwareKeys(EMPTY)>
<!ATTLIST SoftwareKeys
  TC                  (0|1)#REQUIRED
  SI                  (0|1)#REQUIRED
  TCA                 (0|1)#REQUIRED
  UR                  (0|1)#REQUIRED
>
```

The following table gives the meanings of the attributes of the `SoftwareKeys` elements.

Attribute name	Meaning
TC	TrueCopy key
SI	ShadowImage key
UR	Universal Replicator key

Logical Path

```
<!ELEMENT Paths(CUPath*, DKCPath*)>
<!ATTLIST Paths
  ID                  CDATA#REQUIRED
  Description         CDATA#IMPLIED
>

<!ELEMENT CUPath(Ports*)>
<!ATTLIST CUPath
  Shared              (Y|N)#IMPLIED
  PriModel            CDATA#IMPLIED
  SecModel            CDATA#IMPLIED
  PriIFType           CDATA#IMPLIED
```

```
  SecIFType           CDATA#IMPLIED
  PriSerialNum        CDATA#REQUIRED
  SecSerialNum        CDATA#REQUIRED
  PriSSID             CDATA#REQUIRED
  SecSSID             CDATA#REQUIRED
  PriCUNum            CDATA#REQUIRED
  SecCUNum            CDATA#REQUIRED
  PriCCA              CDATA#IMPLIED
  SecCCA              CDATA#IMPLIED
>
<!ELEMENT DKCPath(Ports*)>
<!ATTLIST DKCPath
  Shared              (Y|N)#IMPLIED
  PriModel            CDATA#IMPLIED
  SecModel            CDATA#IMPLIED
  PriIFType           CDATA#IMPLIED
  SecIFType           CDATA#IMPLIED
  PriSerialNum        CDATA#REQUIRED
  SecSerialNum        CDATA#REQUIRED
  PriPathID           CDATA#IMPLIED
  SecPathID           CDATA#IMPLIED
  PriCUNum            CDATA#IMPLIED
  SecCUNum            CDATA#IMPLIED
  PriCCA              CDATA#IMPLIED
  SecCCA              CDATA#IMPLIED
>
```

The following table gives the meanings of the attributes of the `Paths` elements.

Attribute name	Meaning
`ID`	Path set ID
`Description`	Descriptions added by the user

The following table gives the meanings of the attributes of the `CUPath` elements.

Attribute name	Meaning
`Shared`	Existence of sharing
`PriModel`	Primary storage system model
`SecModel`	Secondary storage system model
`PriIFType`	Primary storage system interface version
`SecIFType`	Secondary storage system interface version
`PriSerialNum`	Serial number of the primary storage system
`SecSerialNum`	Serial number of the secondary storage system
`PriSSID`	Primary SSID
`SecSSID`	Secondary SSID
`PriCUNum`	Primary control unit number
`SecCUNum`	Secondary control unit number

Attribute name	Meaning
PriCCA	The command control address of the device to which I/Os are issued when path operations are performed on the Primary site where the path is used.
SecCCA	The command control address of the device to which I/Os are issued when path operations are performed on the Secondary site where the path is used.

The following table gives the meanings of the attributes of the DKCPath elements.

Attribute name	Meaning
Shared	Existence of sharing
PriModel	Primary storage system model
SecModel	Secondary storage system model
PriIFType	Primary storage system interface version
SecIFType	Secondary storage system interface version
PriSerialNum	Serial number of the primary storage system
SecSerialNum	Serial number of the secondary storage system
PriPathID	Primary path group ID
SecPathID	Secondary path group ID
PriCUNum	Primary control unit number
SecCUNum	Secondary control unit number
PriCCA	The command control address of the device to which I/Os are issued when path operations are performed on the Primary site where the path is used.
SecCCA	The command control address of the device to which I/Os are issued when path operations are performed on the Secondary site where the path is used.

Physical Path

```
<!ELEMENT Ports (Port*)>
<!ATTLIST Ports
  Direction           (FORWARD|REVERSE)#IMPLIED
  Type                (FIBRE|ESCON)#IMPLIED
>

<!ELEMENT Port (EMPTY)>
<!ATTLIST Port
  PriPort             CDATA#REQUIRED
  SecPort             CDATA#REQUIRED
```

```
  Status                CDATA#IMPLIED
>
```

The following table gives the meanings of the attributes of the `Ports` elements.

Attribute name	Meaning
`Direction`	Direction of defined physical path
`Type`	Channel type of a physical path

The following table gives the meanings of the attributes of the `Port` elements.

Attribute name	Meaning
`PriPort`	The initiator port number of the Primary site of the logical path
`SecPort`	The target port number of the Secondary site of the logical path
`Status`	Status of a logical path

Command Device Container

```
<!ELEMENT CDEVContainer(CDEVGRP*)>
<!ATTLIST CDEVContainer
  DADID                 ID#REQUIRED
>
```

The following table gives the meanings of the attributes of the `CDEVContainer` elements.

Attribute name	Meaning
`DADID`	Device address domain ID to which a command device belongs

Command Device Group

```
<!ELEMENT CDEVGRP (CDEV*)>
<!ATTLIST CDEVGRP
  DADID                 CDATA#REQUIRED
  APID                  CDATA#REQUIRED
  LABEL                 CDATA#IMPLIED
  CYL                   CDATA#IMPLIED
  HD                    CDATA#IMPLIED
  SLOTSIZE              CDATA#IMPLIED
>
```

The following table gives the meanings of the attributes of the `CDEVGRP` elements.

Attribute name	Meaning
`DADID`	Device address domain ID to which a command device belongs
`APID`	APID#

Attribute name	Meaning
LABEL	Route label
CYL	First cylinder (fixed value of 0001)
HD	First track (fixed value of 00)
SLOTSIZE	Slot size of dummy dataset (fixed value of 2000)

#: XXXX is set for a value whose definition is not yet complete.

Command Device

```
<!ELEMENT CDEV (DiskDevice)>
<!ATTLIST CDEV
  SCHSET              CDATA#IMPLIED
  Devn                CDATA#IMPLIED
  Volser              CDATA#IMPLIED
  DADID               CDATA#REQUIRED
>
```

The following table gives the meanings of the attributes of the CDEV elements.

Attribute name	Meaning
SCHSET	Subchannel set ID
Devn	Device number of the command device in the storage system
Volser	Volume serial number of the command device in the storage system
DADID	Device address domain ID to which a command device belongs

Host-Discovered Array

```
<!ELEMENT HostDiscoveredArray
         (SoftwareKeys, DKCPaths?, HostAddressedDisk*)>
<!ATTLIST HostDiscoveredArray
  Description         CDATA#REQUIRED
  DADID               ID#REQUIRED
  NGDADIDEnable       (0|1)#IMPLIED
  SerialNum           CDATA#REQUIRED
  Model               (VSP|VSPG1000|
                      VSPG1500|VSPF1500|VSP5100|VSP5200|VSP5500|
                      VSP5600|VSP5100H|VSP5200H|VSP5500H|
                      VSP5600H)#REQUIRED
  Microcode           CDATA#REQUIRED
  IFType              CDATA#REQUIRED
  PhysicalSerialNum   CDATA#IMPLIED
>
```

The following table gives the meanings of the attributes of the HostDiscoveredArray elements.

Attribute name	Meaning
Description	Descriptions added by the user
DADID	Device address domain ID
NGDADIDEnable	Non Gen'ed function flag • 0: Not a Non Gen'ed device address domain ID • 1: Non Gen'ed device address domain ID The default is 0.
SerialNum	Serial number of the scanned storage system
Model	Storage system model
Microcode	Microcode number
IFType	Interface version
PhysicalSerialNum	Physical DKC serial number

Disk Controller

```
<!ELEMENT DKC (EMPTY)>
<!ATTLIST DKC
  SerialNum           CDATA#REQUIRED
  DADID               CDATA#REQUIRED
>
```

The following table gives the meaning of the attribute of the DKC elements.

Attribute name	Meaning
SerialNum	Storage system serial number
DADID	Device address domain ID

Route

```
<!ELEMENT Route (DKC*)>
<!ATTLIST Route
  DADID               CDATA#REQUIRED
  priority            CDATA#IMPLIED
>
```

The following table gives the meanings of the attributes of the Route elements.

Attribute name	Meaning
DADID	Device address domain ID
priority	Route priority (fixed value of 1)

RouteList

```
<!ELEMENT RouteList (Route*)>
<!ATTLIST RouteList
```

```
  ID                    ID#REQUIRED
>
```

The following table gives the meaning of the attribute of the `RouteList` elements.

Attribute name	Meaning
`ID`	Route list ID

Configuration file examples

This section provides examples for each of the following configuration file types:

- Copy group definition file
- Disk configuration definition file
- Route list definition file
- Command device definition file
- Path set definition file

Example contents of copy group definition file

The example of the contents of the copy group definition file, *Prefix*.`GRP`.*copy-group-id*, is shown below:

```
<?xml version="1.0" encoding="ebcdic-cp-us"?>
<APIInfo Level="8.6.0">
<CopyGroupContainer ContainerID="LOS.TO.NY"
 Description="UR COPY GROUP"
 SimplexCt="0" DuplexCt="0" PendingCt="0" SuspendOpCt="0" SuspendCuCt="0" SuspendVSCt="0"
SuspendErCt="0" TransitionCt="0" SwappingCt="0" RevresyncCt="0" InvalidCt="0" ReversedCt="0"
 HoldCt="0" HoldErCt="0" HoldTrnsCt="0" NoDeltaCt="0" ExctgEnable="1" >
<ExctgDef>
<EX_DefInfo FwdEnable="1" RevEnable="1" FwdExctgID="2" RevExctgID="1"
FwdSuper_Model="VSPG1000" RevSuper_Model="VSPG1000" FwdSuper_SerialNum="FGHK2"
RevSuper_SerialNum="ABCD1"/>
</ExctgDef>
<CopyGroup ID="LOS.TO.NY" PrimaryDADID="LOS" SecondaryDADID="NY"
 SimplexCt="0" DuplexCt="0" PendingCt="0" SuspendOpCt="0" SuspendCuCt="0" SuspendVSCt="0"
SuspendErCt="0" TransitionCt="0" SwappingCt="0" RevresyncCt="0" InvalidCt="0" ReversedCt="0"
 HoldCt="0" HoldErCt="0" HoldTrnsCt="0" NoDeltaCt="0"
 InitPace="NORMAL" ProtectMode="PROTECT" PrimarySCHSET="1" SecondarySCHSET="2">
<UR_Options GroupID="01" subGroupID="02" MirrorID="1" ErrorLevel="GROUP" CTTimeMode="ASIS"/>
<CopyPair> <PairState Reversed="0"/>
<DiskDevice SerialNum="ABCD1" CUNum="00" SSID="2350" CCA="17"/>
<DiskDevice SerialNum="FGHK2" CUNum="00" SSID="2340" CCA="17"/>
</CopyPair>
<ExctgDefDKC>
<EX_DefDKC FwdModel="VSPG1000" RevModel="VSPG1000" FwdSerialNum="FGHK2" RevSerialNum="ABCD1"/>
</ExctgDefDKC>
</CopyGroup>
<CopyGroup ID="LOS.TO.NY" PrimaryDADID="LOS" SecondaryDADID="NY"
 SimplexCt="0" DuplexCt="0" PendingCt="0" SuspendOpCt="0" SuspendCuCt="0" SuspendVSCt="0"
SuspendErCt="0" TransitionCt="0" SwappingCt="0" RevresyncCt="0" InvalidCt="0" ReversedCt="0"
 HoldCt="0" HoldErCt="0" HoldTrnsCt="0" NoDeltaCt="0"
 InitPace="NORMAL" ProtectMode="PROTECT" PrimarySCHSET="1" SecondarySCHSET="2">
```

```
<UR_Options GroupID="03" subGroupID="04" MirrorID="1" ErrorLevel="GROUP" PathID="01"/>
<CopyPair> <PairState Reversed="0"/>
<DiskDevice SerialNum="14011" CUNum="00" SSID="1350" CCA="18"/>
<DiskDevice SerialNum="14012" CUNum="00" SSID="1340" CCA="18"/>
</CopyPair>
<ExctgDefDKC>
<EX_DefDKC FwdModel="VSPG1000" RevModel="VSPG1000" FwdSerialNum="14012" RevSerialNum="14011"
FwdArbCmdNo="1112" RevArbCmdNo="2222"/>
</ExctgDefDKC>
</CopyGroup>
</CopyGroupContainer>
</APIInfo>
```

Example contents of the disk configuration definition file

The example of the contents of the disk configuration definition file, *prefix*.DSK.SN*nnnnn*.*dad-id*, is shown below:

```
<?xml version="1.0" encoding="ebcdic-cp-us"?>
<APIInfo Level="8.6.0">
<HostDiscoveredArray Description="NY
 VOLUMES" DADID="NY" NGDADIDEnable="0" SerialNum="FGHK2" Model="VSPG1000"
Microcode="700000FF" IFType="4040" PhysicalSerialNum="14002">
<SoftwareKeys TC="1" SI="1" TCA="0" UR="1"/>
<HostAddressedDisk Devn="7312" > <DiskDevice SerialNum="FGHK2" CUNum="00" SSID="2340"
CCA="12" Cyls="3339" External="N"/> </HostAddressedDisk>
<HostAddressedDisk Devn="7313" > <DiskDevice SerialNum="FGHK2" CUNum="00" SSID="2340"
CCA="13" Cyls="3339" External="N"/> </HostAddressedDisk>
<HostAddressedDisk Devn="7314" > <DiskDevice SerialNum="FGHK2" CUNum="00" SSID="2340"
CCA="14" Cyls="3339" External="N"/> </HostAddressedDisk>
<HostAddressedDisk Devn="7315" > <DiskDevice SerialNum="FGHK2" CUNum="00" SSID="2340"
CCA="15" Cyls="3339" External="Y"/> </HostAddressedDisk>
<HostAddressedDisk Devn="7316" > <DiskDevice SerialNum="FGHK2" CUNum="00" SSID="2340"
CCA="16" Cyls="3339" External="Y"/> </HostAddressedDisk>
<HostAddressedDisk Devn="7317" > <DiskDevice SerialNum="FGHK2" CUNum="00" SSID="2340"
CCA="17" Cyls="3339" External="Y"/> </HostAddressedDisk>
<HostAddressedDisk SCHSET="1" Devn="7320"> <DiskDevice SerialNum="FGHK2" CUNum="00"
SSID="2340" CCA="20" Cyls="3339" External="Y"/> </HostAddressedDisk>
</HostDiscoveredArray>
</APIInfo>
```

Example contents of the route list definition file

The example of the contents of the route list definition file, *prefix*.ROUTE.*route-list-id*, is shown below:

```
<?xml version="1.0" encoding="ebcdic-cp-us"?>
<APIInfo Level="6.2.0">
<RouteList ID="LOS.NY">
<Route DADID="LOS" priority="1">
<DKC SerialNum="ABCD1" DADID="LOS"/>
<DKC SerialNum="FGHK2" DADID="NY"/>
</Route>
</RouteList>
</APIInfo>
```

Example contents of the command device definition file

The example of the contents of the command device definition file, *prefix*.CDEV.*dad-id*, is shown below:

```
<?xml version="1.0" encoding="ebcdic-cp-us"?>
<APIInfo Level="8.6.0">
<CDEVContainer DADID="LOS">
<CDEVGRP DADID="LOS" APID="0000">
<CDEV SCHSET="1" Devn="7355" DADID="LOS">
<DiskDevice SerialNum="ABCD1" CUNum="00" SSID="2350" CCA="15"/>
</CDEV>
<CDEV Devn="7315" DADID="NY">
<DiskDevice SerialNum="FGHK2" CUNum="00" SSID="2340" CCA="15"/>
</CDEV>
</CDEVGRP>
<CDEVGRP DADID="LOS" APID="0001">
<CDEV Devn="7356" DADID="LOS">
<DiskDevice SerialNum="ABCD1" CUNum="00" SSID="2350" CCA="16"/>
</CDEV>
<CDEV Devn="7316" DADID="NY">
<DiskDevice SerialNum="FGHK2" CUNum="00" SSID="2340" CCA="16"/>
</CDEV>
</CDEVGRP>
<CDEVGRP DADID="LOS" APID="0002" LABEL="LABEL1">
<CDEV Devn="7357" DADID="LOS">
<DiskDevice SerialNum="ABCD1" CUNum="00" SSID="2350" CCA="17"/>
</CDEV>
<CDEV Devn="7317" DADID="NY">
<DiskDevice SerialNum="FGHK2" CUNum="00" SSID="2340" CCA="17"/>
</CDEV>
</CDEVGRP>
</CDEVContainer>
</APIInfo>
```

Example contents of path set definition file

An example of the contents of the path set definition file, *prefix*.PATH.*path-set-id*, is shown below:

```
<?xml version="1.0" encoding="ebcdic-cp-us"?>
<APIInfo Level="9.1.0">
<Paths ID="PATHSET.ID"
 Description="LOS TO NY">
<CUPath Shared="N"
  PriSerialNum="11111" PriModel="VSP5100" PriIFType="5050"
  PriSSID="1234" PriCUNum="00" PriCCA="00"
  SecSerialNum="22222" SecModel="VSP5500" PriIFType="5050"
  SecSSID="5678" SecCUNum="00" SecCCA="00"
>
<Ports Direction="FORWARD">
  <Port PriPort="00" SecPort="00" />
  <Port PriPort="01" SecPort="01" />
  <Port PriPort="02" SecPort="02" />
  <Port PriPort="03" SecPort="03" />
  <Port PriPort="04" SecPort="04" />
  <Port PriPort="05" SecPort="05" />
  <Port PriPort="06" SecPort="06" />
  <Port PriPort="07" SecPort="07" />
</Ports>
</CUPath>
<DKCPath Shared="Y"
  PriSerialNum="ABCD1" PriModel="VSP5100" PriIFType="5050"
  PriPathID="00"
  SecSerialNum="FGHK2" SecModel="VSP5500" SecIFType="5050"
```

```
  SecPathID="10"
>
<Ports Direction="FORWARD">
  <Port PriPort="00" SecPort="00" />
</Ports>
<Ports Direction="REVERSE">
  <Port PriPort="01" SecPort="01" />
</Ports>
</DKCPath>
</Paths>
</APIInfo>
```

REXX variable structures

The XML format configuration files in XML document type definitions on page 3-6 are loaded to the REXX variable structures by the `YKLOAD` command that Business Continuity Manager processes with the REXX variable structure. This section describes the REXX variable structures used in Business Continuity Manager. To code a REXX script, consult the descriptions of the REXX variables in this section as necessary.

You can use the `YKDROP` command to drop the REXX variables that was loaded by using the `YKLOAD` command. For the REXX variable structures that can be dropped, see YKDROP command on page 2-57.

Note: In this manual, REXX variables and their contents use characters that are defined in the U.S. code page (037). If you use a code page other than 037, correct values might not be acquired or displayed.

Copy group structure

The copy group structure is created by the `YKLOAD` command based on XML-format configuration files.

The table below shows the copy group structure when the configuration file is loaded. The prefix for the name of the copy group structure is *stem-name-specified-in-STEM-parameter*. Each REXX variable is preceded by a period (`.`).

Table 3-8 Copy group structure

REXX variables	Description
`UpdateID`	Last update ID
`ID`	Copy group ID
`Description`	Descriptions added by the user
`SimplexCt`	`SIMPLEX` count (sum value of `CopyGroup.`*n*`.SimplexCt`)
`PendingCt`	`PENDING` count (sum value of `CopyGroup.`*n*`.PendingCt`)

REXX variables	Description
DuplexCt	DUPLEX count (sum value of CopyGroup.*n*.DuplexCt)
TransitionCt	TRANS count (sum value of CopyGroup.*n*.TransitionCt)
SuspendOpCt	SUSPOP count (sum value of CopyGroup.*n*.SuspendOpCt)
SuspendCuCt	SUSPCU count (sum value of CopyGroup.*n*.SuspendCuCt)
SuspendVSCt	SUSPVS count (sum value of CopyGroup.*n*.SuspendVSCt)
SwappingCt#1	SWAPPING count (sum value of CopyGroup.*n*.SwappingCt)
ReversedCt	Count of copy pairs with reverse direction from Secondary to Primary (sum value of CopyGroup.*n*.ReversedCt)
SuspendErCt	SUSPER count (sum value of CopyGroup.*n*.SuspendErCt)
InvalidCt	INVALID count (sum value of CopyGroup.*n*.InvalidCt)
RevrsyncCt	REVRSY count (sum value of CopyGroup.*n*.RevrsyncCt)
HoldCt	HOLD count (sum value of CopyGroup.*n*.HoldCt)
HoldErCt	HOLDER count (sum value of CopyGroup.*n*.HoldErCt)
ChkJnlCt#20	CHKJNL count (sum value of CopyGroup.*n*.ChkJnlCt)
HoldTrnsCt	HOLDTRNS count (sum value of CopyGroup.*n*.HoldTrnsCt)
NoDeltaCt	NODELTA count (sum value of CopyGroup.*n*.NoDeltaCt)
ConslostCt	CONSLOST count (sum value of CopyGroup.*n*.ConslostCt)
PriOnlineCt	Number of online volumes in the primary site (sum value of CopyGroup.*n*.PriOnlineCt)
SecOnlineCt	Number of online volumes in the secondary site (sum value of CopyGroup.*n*.SecOnlineCt)
PriSoftFenceCt#26	Number of volumes with the soft fence status in the primary site (sum value of CopyGroup.*n*.PriSoftFenceCt)

REXX variables			Description
SecSoftFenceCt[#27]			Number of volumes with the soft fence status in the secondary site (sum value of CopyGroup.*n*.SecSoftFenceCt)
PriSPIDFenceCt[#26]			Number of volumes with the SPID fence status in the primary site (sum value of CopyGroup.*n*.PriSPIDFenceCt)
SecSPIDFenceCt[#27]			Number of volumes with the SPID fence status in the secondary site (sum value of CopyGroup.*n*.SecSPIDFenceCt)
CTDelta[#21]			Proxy C/T delta value for the entire copy group
MatchingPerCent[#2,#30]			Copy pair matching rate (average value of CopyGroup.*n*.MatchingPerCent)
PriIFMin			Minimum primary interface version value (minimum value of IFType in the Host-Discovered Array structure of the storage system at the Primary site)
PriTCKeys			Primary TrueCopy key (minimum value of Key.TC in the Host-Discovered Array structure of the storage system at the Primary site)
PriSIKeys			Primary ShadowImage key (minimum value of Key.SI in the Host-Discovered Array structure of the storage system at the Primary site)
SecIFMin			Minimum secondary interface version value (minimum value of IFType in the Host-Discovered Array structure of the storage system at the Secondary site)
SecTCKeys			Secondary TrueCopy key (minimum value of Key.TC in the Host-Discovered Array structure of the storage system at the Secondary site)
SecSIKeys			Secondary ShadowImage key (minimum value of Key.SI in the Host-Discovered Array structure of the storage system at the Secondary site)
ExctgEnable[#11]			EXCTG function • 0: Do not use • 1: Use
Exctg[#12]	Fwd	Enable	EXCTG function during a forward operation • 0: Do not use • 1: Use
		ExctgID[#13]	EXCTG ID (0 to 3)

REXX variables			Description
		Super_Model[#13]	Supervisor disk controller model • VSPG1000 • VSPG1500 • VSPF1500 • VSP5100 • VSP5200 • VSP5500 • VSP5600 • VSP5100H • VSP5200H • VSP5500H • VSP5600H
		Super_SerialNum[#13]	Supervisor disk controller serial number
	Rev	Enable	EXCTG function during a reverse operation • 0: Do not use • 1: Use
		ExctgID[#14]	EXCTG ID (0 to 3)
		Super_Model[#14]	Supervisor disk controller model • VSPG1000 • VSPG1500 • VSPF1500 • VSP5100 • VSP5200 • VSP5500 • VSP5600 • VSP5100H • VSP5200H • VSP5500H • VSP5600H
		Super_SerialNum[#14]	Supervisor disk controller serial number
Exctg2[#24]	Info		If this is Valid, the REXX variables under Exctg2 are valid.
	StartTime		EXCTG information acquisition start time (*yyyymmdd hh*:*mm*:*ss*.*nnnnnn*)
	EndTime		EXCTG information acquisition end time (*yyyymmdd hh*:*mm*:*ss*.*nnnnnn*)
	ArbCTTime[#25]		EXCTG consistency time (*yyyymmdd hh*:*mm*:*ss*.*nnnnnn*)

REXX variables			Description
	ArbCTDelta#25		Difference between the time at which EXCTG information was acquired and the EXCTG consistency time (*ddd hh*:*mm*:*ss*)
Pair	0		Number of copy pairs (sum value of CopyGroup.*n*.Pair.0)
CopyGroup	0		Number of copy groups (number of *n*)
	n#3	ID	Copy group ID
		PrimaryDADID	Primary device address domain ID
		SecondaryDADID	Secondary device address domain ID
		SimplexCt	SIMPLEX count
		DuplexCt	DUPLEX count
		InvalidCt	INVALID count
		PendingCt	PENDING count
		SuspendOpCt	SUSPOP count
		SuspendCuCt	SUSPCU count
		SuspendVSCt	SUSPVS count
		SuspendErCt	SUSPER count
		TransitionCt	TRANS count
		ReversedCt	Count of copy pairs with reverse direction from Secondary to Primary
		SwappingCt#1	SWAPPING count
		RevrsyncCt	REVRSY count
		HoldCt	HOLD count
		HoldErCt	HOLDER count
		ChkJnlCt#20	CHKJNL count
		HoldTrnsCt	HOLDTRNS count
		NoDeltaCt	NODELTA count
		ConslostCt	CONSLOST count
		PriOnlineCt	Number of online volumes in the primary site
		SecOnlineCt	Number of online volumes in the secondary site
		PriSoftFenceCt#26	Number of volumes with the soft fence status in the primary site
		SecSoftFenceCt#27	Number of volumes with the soft fence status in the secondary site

REXX variables			Description
		PriSPIDFenceCt#26	Number of volumes with the SPID fence status in the primary site
		SecSPIDFenceCt#27	Number of volumes with the SPID fence status in the secondary site
		CurrentTime	Current time in local time
		CTTime#22	Consistency time for each consistency group
		CTDelta#22	C/T delta value for each consistency group
		MatchingPerCent#4,#30	Copy pair matching rate (average value of CopyGroup.*n*.Pair.*n*.MatchingPerCent)
		CopyType	Copy type • ShadowImage • TrueCopy • Universal Replicator
		InitPace	Copy pace • SLOW • NORMAL • FAST
		ProtectMode#23	Protect mode
		PrimarySCHSET#28	Primary subchannel set ID
		SecondarySCHSET#28	Secondary subchannel set ID
		TC_FreezeScpMode#23	When Y, makes SCP if SUSPER.
		TC_TimeStampMode	When Y, the timestamp transfer mode is enabled.
		CTGroupID	Consistency group ID or master journal group ID
		subCTGroupID	Restore journal group ID
		LinkageOption	Linkage option • NONE • HS
		TC_FenceLevel	Handling of P-VOL after suspending • NEVER • STATUS • DATA
		TC_Map	Difference management unit • TRK • CYL
		TC_OpenMF	When Y, the Open/MF Consistency Preservation function is used.

REXX variables					Description
		UR_MirrorID			Mirror ID of Universal Replicator
		UR_ErrorLevel			Unit for suspending Universal Replicator copy pairs • GROUP • VOLUME
		UR_CTTimeMode			Consistency time mode of Universal Replicator • JOURNAL • VOLUME • ASIS
		UR_PathID			Path group ID of Universal Replicator
		Related_ID			Related ID
		Related_Type			Related type
		PresetMode			Whether to use the UR ATTIME Suspend function • NORMAL: Do not use • UR: Use
		AttimeSplitMode			Suspend mode used by the UR ATTIME Suspend function. (This indicates whether secondary volumes transitioning to the suspend status can be accessed or updated.) • STEADY: Volumes can be accessed or updated after the copy operation is completed. • QUICK: Volumes can be accessed or updated even while the copy operation is in progress.
		Exctg#12	Fwd#13	Model	Model • VSPG1000 • VSPG1500 • VSPF1500 • VSP5100 • VSP5200 • VSP5500 • VSP5600 • VSP5100H • VSP5200H • VSP5500H • VSP5600H
				SerialNum	Serial number
				ArbCmdNo#15	Arbitration command device number

REXX variables					Description
				ArbCTTime#16 #17	EXCTG consistency time (*yyyymmdd hh*:*mm*:*ss*.*nnnnnn*)
				JNLGValid#16	Journal group registration status • 0: Not registered in EXCTG • 1: EXCTG registration complete • 2: EXCTG registration in progress • 3: EXCTG deletion in progress
				JNLGType#16	Type of journal group • 0: Journal group not in arbitration • 1: Journal group in arbitration
				JNLState#16 #18	Journal status
				ErrorCode#16	Error code
			Rev#14	Model	Model • VSPG1000 • VSPG1500 • VSPF1500 • VSP5100 • VSP5200 • VSP5500 • VSP5600 • VSP5100H • VSP5200H • VSP5500H • VSP5600H
				SerialNum	Serial number
				ArbCmdNo#15	Arbitration command device number
				ArbCTTime#16 #17	EXCTG consistency time (*yyyymmdd hh*:*mm*:*ss*.*nnnnnn*)
				JNLGValid#16	Journal group registration status • 0: Not registered in EXCTG • 1: EXCTG registration complete • 2: EXCTG registration in progress • 3: EXCTG deletion in progress
				JNLGType#16	Type of journal group • 0: Journal group not in arbitration • 1: Journal group in arbitration
				JNLState#16 #18	Journal status

REXX variables					Description
				ErrorCode#16	Error code
		Stats	0		Number of Stats (number of *n*)
			n#5	Pri_Serialnum	Serial number of the primary storage system
				Pri_WPR_All	Primary write pending rate
				Pri_RSF_All#9	Primary reserve sidefile cache-usage rate
				Pri_RSF_CT	Primary reserve sidefile cache-usage rate for C/T
				Sec_Serialnum#19	Serial number of the secondary storage system
				Sec_WPR_All	Secondary write pending rate
				Sec_RSF_All#9, #19	Secondary reserve sidefile cache-usage rate
				Sec_RSF_CT	Secondary reserve sidefile cache-usage rate for C/T
				Sidefile_Threshold	Sidefile threshold
				Offload_Timer	Offloading timer
				RCU_Ready_Timer	Remote control unit ready timer
				Copy_Pending_Timer	Copy pending timer
				MCU_TO_RCU_KBPS #19	Data transmission speed between main control unit-remote control unit (Kbps)
				Pri_JNL_Meta	Metadata % used rate in master journal volume. The percentage used of the Journal Metadata capacity available in the Journal Volume(s) registered to M-JNL.
				Pri_JNL_Data	Data % used rate in master journal volume. The percentage used of the Journal Data capacity available in the Journal Volume(s) registered to M-JNL.
				Sec_JNL_Meta#19	Metadata % used rate in restore journal volume. The percentage used of the Journal Metadata capacity available in the Journal Volume(s) registered to R-JNL.
				Sec_JNL_Data#19	Data % used rate in restore journal volume. The percentage used of the Journal Data capacity available in the Journal Volume(s) registered to R-JNL.
				Pri_JNL_Trfr	Operating information between journal groups in the primary storage system

REXX variables						Description
				Sec_JNL_Trfr#19		Operating information between journal groups in the secondary storage system
				Pri_JNL_Cache_Capacity#10		Cache capacity in the master journal volume (GB)
				Pri_JNL_Data_Capacity		Data capacity in the master journal volume (GB)
				Sec_JNL_Cache_Capacity#10, #19		Cache capacity in the restore journal volume (GB)
				Sec_JNL_Data_Capacity#19		Data capacity in the restore journal volume (GB)
		Pair	0			Number of copy pairs (number of *n*)
			n#6	State		Copy pair status
				CTDelta#1, #8, #19		C/T delta value
				Volser		Volume serial number
				MatchingPerCent #7, #29, #30		Copy pair matching rate
				Reversed		Whether direction is reverse from Secondary to Primary • 1 • 0
				CTtime#1, #8, #19		Consistency time
				Diagnosis		Diagnosis information
				Pri	Devn	Device number of the P-VOL
					SerialNum	Storage system serial number
					CUNum	Primary control unit number
					SSID	Primary SSID
					CCA	Primary command control address
					IFType	Primary interface version
					Model	Primary storage system model • VSPG1000 • VSPG1500 • VSPF1500 • VSP5100 • VSP5200 • VSP5500 • VSP5600 • VSP5100H • VSP5200H

REXX variables						Description
						• VSP5500H • VSP5600H
					HostStatus	Host connection status of the P-VOL • ONLINE • OFFLINE
					FenceStatus#16, #26	Fence status of the P-VOL • SOFT: Only soft fence is set. • SPID: Only SPID fence is set. • BOTH: Both soft fence and SPID fence are set. • UNFENCE: Neither soft fence nor SPID fence is set.
				Sec	Devn	Device number of the S-VOL
					SerialNum	Serial number of the secondary storage system
					CUNum	Secondary control unit number
					SSID	Secondary SSID
					CCA	Secondary command control address
					IFType	Secondary interface version
					Model	Secondary storage system model • VSPG1000 • VSPG1500 • VSPF1500 • VSP5100 • VSP5200 • VSP5500 • VSP5600 • VSP5100H • VSP5200H • VSP5500H • VSP5600H
					HostStatus	Host connection status of the S-VOL • ONLINE • OFFLINE
					FenceStatus#16, #27	Fence status of the S-VOL • SOFT: Only soft fence is set. • SPID: Only SPID fence is set. • BOTH: Both soft fence and SPID fence are set.

REXX variables						Description
						• UNFENCE: Neither soft fence nor SPID fence is set.

#1: Information can be displayed only when information is obtained from Secondary site.

#2: Average matching rate of copy pairs in a copy group.

#3: Created for each CopyGroup information item. This value is the copy group number.

#4: Average matching rate of copy pairs in a copy group.

#5: Created for each Stats information item.

#6: Created for each Pair information item. The value is the copy pair number.

#7: The value acquired from the primary site is usually set. However, if the copy type is ShadowImage, the value acquired from the primary or secondary site is set. Also, if information is not acquired, the value is 0.

#8: Effective only when the timer type of the consistency group is SYSTEM. If information is not obtained, the value is null.

#9: The value is invalid when the copy type is Universal Replicator.

#10: The value is invalid.

#11: The value is 1 when the EXCTG function is used.

#12: Information can be acquired only when the EXCTG function is used.

#13: Information can be acquired only when the EXCTG function is used during a forward operation.

#14: Information can be acquired only when the EXCTG function is used during a reverse operation.

#15: For supervisor disk controller, the value is null.

#16: The value is null when information cannot be acquired.

#17: Displayed in GMT.

#18: The details for the journal status are shown below.

Cause code (hexadecimal)	Details
00	Initial status
10	Start status
11	Restore journal was interrupted/stopped (Indicates the status when restore journal is stopped due to a copy pair

Cause code (hexadecimal)	Details
	suspend or dissolve operation for the S-VOL, and a transition is performed to the start status)
20	Interrupted status
22	Interrupted
40	Stopped status
44	Stopped

#19: The value will be invalid if a command is executed for a delta resync pair.

#20: The value is always `0`.

#21: The following table shows the C/T delta values stored in the REXX variable.

Condition	Value that is set
Copy group container that is not EXCTG	Maximum C/T delta value for the entire consistency group
EXCTG	Minimum C/T delta value for the entire consistency group
Copy group contains one or more consistency groups for which a C/T delta value cannot be acquired (consistency cannot be preserved).	`null`

#22: If consistency cannot be preserved for each consistency group, the value is `null`.

#23: This value is invalid for a PPRC copy pair.

#24: This REXX variable is valid after the `YKQEXCTG` command is executed.

#25: This REXX variable is `null` if the EXCTG consistency time is invalid.

#26: This REXX variable is valid after the `YKFENCE` command is executed with the `TO(PRIMARY)` parameter specified.

#27: This REXX variable is valid after the `YKFENCE` command is executed with the `TO(SECONDARY)` parameter specified.

#28: This REXX variable is created when the subchannel set ID is not 0.

#29: If the copy type is Universal Replicator and the copy status is `DUPLEX`, the value is 100.

#30: If copy pairs other than ShadowImage are in the suspend status, the displayed values correspond to the amounts written to the P-VOL after the suspension, and do not include the amounts written to the S-VOL. When

these copy pairs are resynchronized, the values might change, because the values corresponding to the amounts written to the P-VOL and S-VOL are adjusted when the differential copy is performed.

Note: Element names ending with `0` include the number of `.n.` elements of the node.

Host-Discovered Array Index structure

The Host-Discovered Array Index structure is created by using one of the following methods:

- Executing the `YKLOAD` command to load copy groups, so that the disk configuration definition file will be converted to the Host-Discovered Array Index structure.
- Executing the `YKSCAN` command, so that the scanned information will be converted to the Host-Discovered Array Index structure with a prefix specified in the `ARRAYS` parameter.
- Executing the `YKGETHDA` command, so that the disk configuration definition file will be converted to the Host-Discovered Array Index structure.

The `YKSTORE` command saves the Host-Discovered Array Index structure to the configuration file.

The table below shows the Host-Discovered Array Index structure. The prefix for the name of the Host-Discovered Array Index structure is one of the following:

- When the `YKLOAD` command or the `YKGETHDA` command is used for creating the structure: `HCC.HDA`.
- When the `YKSCAN` command is used for creating the structure: *stem-name-specified-in-ARRAYS-parameter*

Each REXX variable is preceded by a period (`.`).

Table 3-9 Host-Discovered Array Index structure

REXX variables			Description
`0`			Number of storage systems (number of *n*)
n#1	`SerialNum`		Serial number of a scanned storage system
	`DADID`		Device address domain ID
	`Prefix`		Value specified to *stem-name* for Host-Discovered Array structure, excluding the trailing period.
	`CUMap`		Map information acquired from control unit number
	`CU`*xx*#2	`CCAMap`	Map information acquired from command control address
		`CDEVMap`	Command device map information

#1: Created for each SN (storage system serial number), thus index information for each disk connected to the host is created.

#2: Created for each control unit, thus the disk index information is created for each defined control unit (control unit number). The *xx* in CU*xx* is a hexadecimal value.

Example of CUMap:

For CUMap, 1 is assigned to the area that conforms to the control unit number.

When the defined CU number is 00, 01, 03, and 05, the value for CUMap is 11 Δ1Δ1.

Example of CCAMap:

For CCAMap, 1 is assigned to the area that conforms to the command control address.

When the defined CCA is 01, 02, 04, and 06, the value for CCAMap is Δ11Δ1 Δ1.

Example of CU*xx*:

If Δ11Δ1Δ1 is set to CCAMap of CU=05, the value for CU05.CCAMap is Δ11 Δ1Δ1.

stem-name is fixed so that the YKLOAD command and the YKSTORE command can access the structure.

Host-Discovered Array structure

The Host-Discovered Array structure is created by using one of the following methods:

- Executing the YKLOAD command to load copy groups, so that the disk configuration definition file will be converted to the Host-Discovered Array structure.
- Executing the YKSCAN command or the YKGETHDA command, so that the scanned information will be converted to the Host-Discovered Array structure with a prefix specified in the STEM parameter.

The YKSTORE command saves the Host-Discovered Array structure to the configuration file.

The information in the Host-Discovered Array Index structure is used for referring to the Host-Discovered Array structure. For the structure, see Host-Discovered Array Index structure on page 3-37.

The table below shows the Host-Discovered Array structure. The prefix for the name of the Host-Discovered Array structure is one of the following:

- When the YKLOAD command or the YKGETHDA command is used for creating the structure: *stem-name-specified-in-STEM-parameter* and *dad-*

id. However, when the VAROPT parameter is specified for the YKLOAD command, the prefix is HCC.DSK. and *dad-id*.

- When the YKSCAN command is used for creating the structure: *stem-name-specified-in-STEM-parameter*

Each REXX variable is preceded by a period (.).

Table 3-10 Host-Discovered Array structure

REXX variables				Description
SN*nnnnn*	UpdateID			Last update ID
	Description			Descriptions added by the user
	SerialNum			Storage system serial number
	Model			Storage system model • VSPG1000 • VSPG1500 • VSPF1500 • VSP5100 • VSP5200 • VSP5500 • VSP5600 • VSP5100H • VSP5200H • VSP5500H • VSP5600H
	Microcode			Microcode number
	IFType			Interface version
	PhysicalSerialNum			Physical disk controller serial number
	LDKCNum			Logical disk controller number
	Key.SI			ShadowImage key
	Key.TC			TrueCopy key
	Key.UR			Universal Replicator key
	NGDADIDEnable			Non Gen'ed function flag • 0: Not a Non Gen'ed device address domain ID • 1: Non Gen'ed device address domain ID
	CU*xx*[#1]	SSID		One of the SSIDs of a control unit
		CCA*xx*[#2]	SCHSET[#4]	Subchannel set ID
			Devn	Device number
			Volser	Volume serial number

REXX variables				Description
			SSID	SSID
			Cyls	Volume capacity (the number of cylinders)
			External#3	External volume information • Y: External volume • N: Not an external volume

#1

Created for each control unit, thus the device information is created for each defined control unit (control unit number). The *xx* in CU*xx* is a control unit number (hexadecimal value).

Example of CU*xx*:

If C400 is set to an SSID of CU=05, the value for CU05.SSID is C400.

#2

Created for each command control address, thus the device information is created for each defined command control address (command control address number). The *xx* in CCA*xx* is a command control address (hexadecimal value).

Example of CCAxx:

If STRG01 is set to the volume serial number of CCA=FF within CU=05, the value for CU05.CCAFF.Volser is STRG01.

#3

External volume information can be obtained when Business Continuity Manager scans a device. If information cannot be obtained, the value is null.

#4

This REXX variable is created when the subchannel set ID is not 0.

Route list structure

The table below shows the route list structure. The prefix for the name of the route list structure is HCC.ROUTELIST.*dad-id*.

Each REXX variable is preceded by a period (.).

Table 3-11 Route list structure

REXX variables	Description
ID	Route list ID
MultiAccessEnable	Multiaccess (Whether multiple command device lines have been loaded for one route) • 1: Enabled (Multiple command device lines have been loaded.)

REXX variables					Description
					• 0: Disabled (One command device line has been loaded.)
APID#3					APID
IF#					Unique IF# given to local host (0x00-1F)
CYL					First cylinder (fixed value of 0001)
HD					First track (fixed value of 00)
SLOTSIZE					Slot size of dummy dataset (fixed value of 2000)
0					Number of Routes (number of *n*)
n#1	Priority				Route priority (fixed value of 1)
	0				Number of storage systems defined in the route
	n#2	SerialNum			Serial number of the storage system defined in the route
		DADID			Device address domain ID to which a command device belongs
		IFTYPE			Storage system interface version
		CDEV	SCHSET#3 #6		Subchannel set ID
			Devn#3		Device number of the command device in the storage system
			Volser#3		Volume serial number of the command device in the storage system
			CUNum#3		Control unit number of the command device in the storage system
			SSID#3		SSID of the command device in the storage system
			CCA#3		Command control address of the command device in the storage system
			0		Number of command devices in the storage system (number of *n*)
			n#4	APID#5	APID
				LABEL#5	Route label
				SCHSET#5 #6	Subchannel set ID
				Devn#5	Device number of the command device in the storage system
				Volser#5	Volume serial number of the command device in the storage system
				CUNum#5	CU number of the command device in the storage system
				SSID#5	SSID of the command device in the storage system
				CCA#5	CCA of the command device in the storage system

#1: Created for each route.

#2: Created for each storage system used in the route.

#3: The information for the first command device in the storage system is set. This variable can be used if the `MultiAccessEnable` value is 0. In Business Continuity Manager 6.7.1 or later, however, we recommend that you use a variable indicated by #5, even if the `MultiAccessEnable` value is 0.

#4: Created as many times as the number of the command devices in the storage system.

#5: The information for the command devices in the storage system is set regardless of the `MultiAccessEnable` value.

#6: This REXX variable is created when the subchannel set ID is not 0.

Message structure

The table below shows the message structure. The prefix for the name of the message structure is *stem-name-specified-in-MSG-parameter*. Each REXX variable is preceded by a period (`.`).

The CLI commands and scripts of Business Continuity Manager return a result to the caller by using the REXX variable in the message structure. See the description of each command for how the message structure is used.

Table 3-12 Message structure

REXX variables		Description
`0`		Number of messages (number of *n*)
n#	`Severity`	Severity level
	`Text`	Message ID and Message text
	`Value`	Additional information

#: Created for each command. When more than one message exists in one command, the process is repeated for each message.

Note: The element names ending with `0` include the number of `.`*n*`.` elements of the node after REXX conversion.

Device information structure

The table below shows the device information structure. The prefix for the name of the device information structure is *stem-name-specified-in-STEM-parameter-of-the-YKQRYDEV-command*. Each REXX variable is preceded by a period (`.`).

Table 3-13 Device information structure

REXX variables				Description
Info#1				Existence of device information structure (Valid)
SSID				SSID of the specified volume
Serialnum				Storage system serial number of the specified volume
CUNum				Control unit number of the specified volume
CCA				Command control address of the specified volume
Cyls				Volume capacity (the number of cylinders)
HostStatus				Status of host connection • ONLINE • OFFLINE
DKC	Model			Storage system model • VSPG1000 • VSPG1500 • VSPF1500 • VSP5100 • VSP5200 • VSP5500 • VSP5600 • VSP5100H • VSP5200H • VSP5500H • VSP5600H
	Microcode			DKCMAIN microcode version
	IFType			Interface version
	PPInfo			Information of installed program product
VOL	Info#1			Existence of volume attribute information (Valid)
	Attr#2			Volume attribute • NORMAL • JOURNAL • COMMAND
Cdev	Info#1			Existence of Cdev information (Valid)
	Status			Status of command device (CDEV)
	APID			APID
Pair	Info#1			Existence of copy pair information (Valid)
	TC	0		Number of TrueCopy copy pairs (0 to 2)
		n	State	Status of TrueCopy copy pair

REXX variables					Description
					• PENDING (01) • DUPLEX (02) • SUSPOP (03) • SUSPOP (04) • SWAPPING (04) • SUSPOP (05) • SUSPCU (06) • SUSPER (07) • SUSPCU (08) • SUSPER (09) • SUSPOP (0A) • MTIR (10) • SUSPER (50) • SUSPER (A0)
			CONSLOST		Data inconsistency in the TrueCopy copy pair (CONSLOST status) • Y: The copy process of the related FlashCopy® was interrupted. • N: Normal status
			Path		Status of path • Active • Inactive
			FenceLevel#3		Fence level • NEVER • STATUS • DATA
			Pri	SSID	SSID of P-VOL
				Serialnum	Storage system serial number of P-VOL
				CUNum	Control unit number of P-VOL
				CCA	Command control address of P-VOL
			Sec	SSID	SSID of S-VOL
				Serialnum	Storage system serial number of S-VOL
				CUNum	Control unit number of S-VOL
				CCA	Command control address of S-VOL
			MatchingPerCent#9		Copy pair matching rate
			Mode		Copy mode • Sync • Async
			MAP		Difference management unit

REXX variables					Description
					• CYL • TRK
			ProtectMode#4		Protect mode • PROTECT • PERMIT
			FreezeSCPMode#3, #4		Freeze SCP • Y • N
			InitPace		Copy pace • SLOW • NORMAL
			CT	ID#5	Consistency group ID
				Time#6	Consistency time (*yyyymmdd hh*:*mm*:*ss*.*nnnnnn*)
				OpenMF#5	Use of the Open/MF Consistency Preservation function. • Y • N
			AT	Info#1	Existence of ATTIME suspend information (Valid)
				Time#6	Suspend time according to GMT (*yyyymmdd hh*:*mm*:*ss*.*nnnnnn*)
	SI	0			Number of ShadowImage copy pairs (0 to 3)
		n	State		Status of ShadowImage copy pair • PENDING (01) • DUPLEX (02) • TRANS (03) • SUSPOP (04) • PENDING (05) • SUSPER (06) • SUSPVS (07) • REVRSY (08) • TRANS (09)
			ProtectMode		Protect mode • PROTECT • PERMIT
			InitPace		Copy pace • SLOW • NORMAL • FAST
			MatchingPerCent		Copy pair matching rate

REXX variables					Description
			Pri	SSID	SSID of P-VOL
				Serialnum	Storage system serial number of P-VOL
				CUNum	Control unit number of P-VOL
				CCA	Command control address of P-VOL
			Sec	SSID	SSID of S-VOL
				Serialnum	Storage system serial number of S-VOL
				CUNum	Control unit number of S-VOL
				CCA	Command control address of S-VOL
			CT	ID	Consistency group ID
			AT	Info#1	Existence of ATTIME suspend information (Valid)
				GenID	Generation ID
				Time#6	ATTIME suspend time (*yyyymmdd hh*:*mm*:*ss*.*nnnnnn*)
				Tout	Timeout value (minutes)
				Status	ATTIME status • Notset: The ATTIME suspend time is not set. • PRESET: The ATTIME suspend time is set but suspend has not been performed. • SUSPEND (TIMESTAMP): Suspend was performed because the ATTIME suspend time elapsed. • SUSPEND (TIMEOUT): Suspend was performed because a timeout occurred.
				PairCt	Number of copy pairs in the consistency group
				SuspendOpCt	Number of suspended copy pairs
				TransCt	Number of suspending copy pairs
				SuspendErCt	Number of failure suspended copy pairs
				Trem	Time remaining until timeout (minutes)
				PendingCt	Number of copy pairs made by full copy
				DuplexCt	Number of Duplex copy pairs in the consistency group to which the specified device belongs
				ResyncCt	Number of Resync copy pairs in the consistency group to which the specified device belongs
			AT_UR	Info#1	Existence of UR ATTIME suspend information (Valid)
				R_JNL	Remote journal group ID
				GenID	Generation ID (hexadecimal number: 00-FF)
				SplitMode	Suspend mode used by the UR ATTIME Suspend function.

REXX variables					Description
					(This indicates whether secondary volumes transitioning to the suspend status can be accessed or updated.) • STEADY: Volumes can be accessed or updated after the copy operation is completed. • QUICK: Volumes can be accessed or updated even while the copy operation is in progress.
				Status	ATTIME suspend status • Notset: The ATTIME suspend time is not set. • PRESET: The ATTIME suspend time is set, but suspend has not been performed. • SUSPEND (TIMESTAMP): Suspend was performed because the ATTIME suspend time elapsed. • SUSPEND (TIMEOUT): Suspend was performed because a timeout occurred. • SUSPEND (NOIO): Suspend was performed because no update journal was detected.
				SIStatus	ShadowImage copy group status • WAITING: Suspend processing has not been started. • SUSPENDING: Suspend processing is ongoing. • SUSPEND: Suspend processing ended normally. • ERROR: Suspend processing ended abnormally.
				URStatus	The status of the Universal Replicator copy group when the ShadowImage copy group is suspended. • DUPLEX: When suspend was performed, all Universal Replicator copy pairs were in DUPLEX status. • UNEXPECTED: When a suspend was performed, some Universal Replicator copy pairs were not in DUPLEX status.
				ErrorCode	Error code (hexadecimal number: 0000-FFFF)
				Time#6	ATTIME suspend information (*yyyymmdd hh*:*mm*:*ss*.*nnnnnn*)
				Tout	Timeout value since the command is issued (minutes)
				Tout2	Timeout value since the ATTIME suspend time (minutes)
				Trem	Time remaining until timeout (minutes)
				CTTime#6	Consistency time for the Universal Replicator copy group at suspension (*yyyymmdd hh*:*mm*:*ss*.*nnnnnn*)
	UR	Info#1			Existence of copy pair information (Valid)
		0			Number of Universal Replicator copy pairs
		n	State		Existence of Universal Replicator copy pair • PENDING (01) • DUPLEX (02) • SUSPOP (04)

REXX variables					Description
					• SWAPPING(04) • SUSPOP (05) • SUSPCU (06) • SUSPER (07) • SUSPCU (08) • SUSPER (09) • TRANS (60) • TRANS (61) • HOLD (70) • HOLDER (71) • HOLDTRNS (72) • HOLDER (73) • NODELTA (74)
			MatchingPerCent#9		Copy pair matching rate
			ProtectMode		Protect mode • PROTECT • PERMIT
			ExctgRegistFlag		EXCTG registration flag • 0 • 1 If the EXCTG function is applied, 1 is set only when the journal group that has the applicable volume has been registered in EXCTG.
			ExctgRegistFlag2#7		EXCTG registration flag for pair target journal group • 0 • 1 If the EXCTG function is applied, 1 is set only when the journal group that has the pair target volume of the applicable volume, has been registered in EXCTG.
			ErrorLevel#8		Error level in Universal Replicator • GROUP • VOLUME
			ExctgID		EXCTG ID
			PathID#8		Path group ID
			Pri	SSID	SSID
				Serialnum	Storage system serial number
				CUNum	Control unit number
				CCA	Command control address
			Sec	SSID	SSID

REXX variables						Description
				Serialnum		Storage system serial number
				CUNum		Control unit number
				CCA		Command control address
			CT	ID		Master journal number
				subID		Remote journal number
				TimerType		Consistency group timer type • SYSTEM • LOCAL • NONE
				Status		C/T status
				TIME		Consistency time acquired in accordance with the storage system's system option mode (TOD or disk controller time)
				JNL_TIME		Consistency time acquired from the journal (TOD or disk controller time)
				SVOL_TIME		Consistency time acquired from the volume (TOD or disk controller time)
Path	CU*xx*	Info#1				Existence of inter-control unit path information (Valid)
		0				Number of inter-control unit logical paths established from the control unit to which this device belongs (0 to 4)
		n	type			Path type • ESCON • FIBRE
			Sec	Model		Model of secondary storage system • VSPG1000 (VSP G1000, VSP G1500, or VSP F1500) • VSP5000(VSP 5100, VSP 5200, VSP 5500, VSP 5600, VSP 5100H, VSP 5200H, VSP 5500H, or VSP 5600H)
				Serialnum		Serial number of secondary storage system
				SSID1		SSID1 of secondary storage system
				SSID2		SSID2 of secondary storage system
				SSID3		SSID3 of secondary storage system
				SSID4		SSID4 of secondary storage system
			P2S	0		Number of physical paths in inter-control unit logical path (0 to 8)
				n	Status	Status of physical path • NO PATH • ESTABLISHED • INIT FAILED • TIME OUT

REXX variables						Description
						• NO RESOURCES AT PRI • NO RESOURCES AT SEC • SERIAL# MISMATCH • CONFIG ERROR
					Pri. Port	Initiator port number (for ESCON, link address)
					Sec. Port	Target port number (for ESCON, link address)
					Sec. CUNum	Secondary control unit number
	DKC	Info#1				Existence of inter-disk controller path information (Valid)
		Sec	Model			Model of secondary storage system • VSPG1000 (VSP G1000, VSP G1500, or VSP F1500) • VSP5000(VSP 5100, VSP 5200, VSP 5500, VSP 5600, VSP 5100H, VSP 5200H, VSP 5500H, or VSP 5600H)
			Serialnum			Serial number of secondary storage system
		0				Number of path group IDs established from the storage system to which this device belongs to the storage system of Sec.SerialNum (0 to 64)
		n	PATHID			Path group ID
			0			Number of physical paths (0-8) in the inter-disk controller logical path with the corresponding path group ID
			n	Status		Status of physical path • NO PATH • ESTABLISHED • INIT FAILED • TIME OUT • NO RESOURCES AT PRI • NO RESOURCES AT SEC • SERIAL# MISMATCH • CONFIG ERROR
				Pri.Port		Initiator port number
				Sec.Port		Target port number
PSN	Info#1					Existence of PSN information (Valid)
	PhysicalSerialNum					Physical DKC serial number
	LDKCNum					Logical disk controller number

#1: When the information is acquired, Valid is stored.

#2: When the emulation type of the journal volume is OPEN-V, NORMAL is displayed.

#3: Information can be acquired for TrueCopy.

#4: This value is invalid for a PPRC copy pair.

#5: Information can be acquired for TrueCopy with consistency group ID specified.

#6: Displayed in GMT.

#7: Information can be acquired for P-VOL when the status for the Universal Replicator copy pair is PENDING or DUPLEX.

#8: When the copy type is Universal Replicator and the corresponding attribute settings are supported, information is displayed.

When information could not be acquired, the value becomes null.

#9: If copy pairs are in the suspend status, the displayed values correspond to the amounts written to the P-VOL after the suspension, and do not include the amounts written to the S-VOL. When these copy pairs are resynchronized, the values might change, because the values corresponding to the amounts written to the P-VOL and S-VOL are adjusted when the differential copy is performed.

Path set structure

The table below shows the path set structure. Prefixes for the name of the path set structure is *stem-name-specified-in-STEM-parameter* and PATH.

Each variable is preceded by a period (.).

Table 3-14 Path set structure

REXX variables			Description
UpdateID			Last update ID
ID			Path set ID
Description			Descriptions added by the user
0			Number of logical paths used in path set
n	type		Path type • CU • DKC
	shared		Existence of sharing • Y • N
	Pri	SerialNum	Serial number of primary storage system
		Model	Type of primary storage system • VSPG1000

REXX variables			Description
			• VSPG1500 • VSPF1500 • VSP5100 • VSP5200 • VSP5500 • VSP5600 • VSP5100H • VSP5200H • VSP5500H • VSP5600H
		IFType	Interface version of primary storage system
		PathID#2	Primary path group ID
		SSID#1	Primary SSID
		CUNum	Primary control unit number
		CCA	The command control address of the device to which I/Os are issued when path operations are performed on the Primary site where the path is used.
		DEVN	The device number of the device to which I/Os are issued when path operations are performed on the Primary site where the path is used.
		SCHSET#4	The subchannel set ID of the device to which I/Os are issued when path operations are performed on the Primary site where the path is used.
	Sec	SerialNum	Serial number of secondary storage system
		Model	Type of secondary storage system • VSPG1000 • VSPG1500 • VSPF1500 • VSP5100 • VSP5200 • VSP5500 • VSP5600 • VSP5100H • VSP5200H • VSP5500H • VSP5600H
		IFType	Interface version of secondary storage system
		PathID#2	Secondary path group ID
		SSID#1	Secondary SSID
		CUNum	Secondary control unit number

REXX variables					Description
		CCA			The command control address of the device to which I/Os are issued when path operations are performed on the Secondary site where the path is used.
		DEVN			The device number of the device to which I/Os are issued when path operations are performed on the Secondary site where the path is used.
		SCHSET#4			The subchannel set ID of the device to which I/Os are issued when path operations are performed on the Secondary site where the path is used.
	P2S	0			Number of defined physical paths from the Primary site to the Secondary site (0 to 8)
		n	Status#3		Status of a logical path
			Pri	port	The initiator port number of the Primary site of the logical path (on the storage system indicated by Pri.SerialNum)
			Sec	port	The target port number of the Secondary site of the logical path (on the storage system indicated by Sec.SerialNum)
		Setting	0		The number of physical paths from the Primary site to the Secondary site set in the storage system (0 to 8)
	S2P	0			The number of defined physical paths from the Secondary site to the Primary site (0 to 8)
		n	Status#3		Status of a logical path
			Pri	port	The target port number of the Primary site of the logical path (on the storage system indicated by Pri.SerialNum)
			Sec	port	The initiator port number of the Secondary site of the logical path (on the storage system indicated by Sec.SerialNum)
		Setting	0		The number of physical paths from the Secondary site to the Primary site set in the storage system (0 to 8)

#1: These variables are valid when the *n*.type value is CU.

#2: These variables are valid when the *n*.type value is DKC.

#3: When the YKLOAD command is executed, values are loaded from the configuration file and set as REXX variables. When the YKQRYPTH command is executed, REXX variables are updated.

#4: This REXX variable is created when the subchannel set ID is not 0.

FlashCopy® information structure

The table below shows the FlashCopy® information structure. The prefix for the name of the FlashCopy® information structure is *stem-name-specified-in-STEM-parameter*. Each REXX variable is preceded by a period (.).

Table 3-15 FlashCopy® information structure

REXX variables		Description
`Info`#		Existence of FlashCopy® information structure (`Valid`)
`Source`	`State0`	Hardware information
	`State1`	Hardware information
	`State2`	Hardware information
	`State3`	Hardware information
	`State4`	Hardware information
	`State5`	Hardware information
	`State6`	Hardware information
	`State7`	Hardware information
`Target`	`State0`	Existence of a FlashCopy® relationship: • `0`: No • `1`: Yes (copying)
	`State1`	Existence of a FlashCopy® in COPY mode relationship: • `0`: No • `1`: Yes (Copying in COPY mode)
	`State2`	Existence of a FlashCopy® in NOCOPY mode relationship: • `0`: No (No FlashCopy® in NOCOPY mode) • `1`: Yes (FlashCopy® in NOCOPY mode exists)
	`State3`	Hardware information
	`State4`	Hardware information
	`State5`	Hardware information
	`State6`	Existence of a failure suspension during FlashCopy®: • `0`: No • `1`: Yes
	`State7`	Existence of an incremental FlashCopy® relationship: • `0`: No • `1`: Yes

#: When the information is acquired, `Valid` is stored.

STEM Index structure

The STEM Index structure is created by executing the `YKLOAD` command with the `VAROPT` parameter specified.

The table below shows the STEM Index structure. The prefix for the name of the STEM Index structure is `HCC.GRP`. Each REXX variable is preceded by a period (`.`).

Table 3-16 STEM Index structure

REXX variables		Description
`0`		Number of `YKLOAD` commands executed with the `VAROPT` parameter specified (*n*).
n	`Prefix`	Value specified for the `STEM` parameter of the `YKLOAD` command, excluding the trailing period.

ORDER structure

The user creates an ORDER structure to narrow down the copy pairs for which operations are performed in a copy group and to specify the order of operations.

The commands that can specify the ORDER structure are as follows:

- `YKDELETE`
- `YKEWAIT`
- `YKMAKE`
- `YKRESYNC`

Note: Only the `YKEWAIT` command is not related to the order of operations specified in the ORDER structure.

The table below shows the ORDER structure. The prefix for the name of the ORDER structure is *stem-name-specified-in-ORDER-parameter*. Each REXX variable is preceded by a period (.).

Table 3-17 ORDER structure

REXX variable	Description
`0`	Number of operations to be specified (*n*)
n	Specify the copy group number and the copy pair number in the copy group structure created by the `YKLOAD` command. Format *Number-of-CopyGroups*[,*Number-of-Pairs*] ~ <numeric characters> If you omit *Number-of-Pairs*, all copy pairs included in *Number-of-CopyGroups* are the targets. In this case, the order of operations is the order of the copy pair numbers. Note: Do not specify a space before and after each item.

Example of creating the ORDER structure

The *STEM-name* specified for the `ORDER` parameter of each command is `Order_stem`.

```
Order_stem.0=3       /* Num. of operations is 3, executed in the order below */
Order_stem.1=1','1   /* Copy pair number 1 of copy group number 1 */
Order_stem.2=1','3   /* Copy pair number 3 of copy group number 1 */
Order_stem.3=2       /* All copy pairs included in copy group number 2 */
```

REXX variables updated by YKQUERY and YKEWAIT commands

The table below shows the copy group structure's REXX variables that are updated by the `YKQUERY` command and the `YKEWAIT` command. REXX variables that are not affected by either of the above commands are omitted from the tables.

Table 3-18 REXX variables updated by YKQUERY and YKEWAIT commands

REXX variables	YKQUERY		YKEWAIT	
	DEVN specified	DEVN not specified	DEVN specified#1	DEVN not specified#1
SimplexCt	N	Y	N	Y
PendingCt	N	Y	N	Y
DuplexCt	N	Y	N	Y
TransitionCt	N	Y	N	Y
SuspendOpCt	N	Y	N	Y
SuspendCuCt	N	Y	N	Y
SuspendVSCt	N	Y	N	Y
SwappingCt	N	Y	N	Y
ReversedCt	N	Y	N	Y
SuspendErCt	N	Y	N	Y
InvalidCt	N	Y	N	Y
RevrsyncCt	N	Y	N	Y
HoldCt	N	Y	N	Y
HoldErCt	N	Y	N	Y
HoldTrnsCt	N	Y	N	Y
NoDeltaCt	N	Y	N	Y
ConslostCt	N	Y	N	Y

REXX variables					YKQUERY		YKEWAIT	
					DEVN specified	DEVN not specified	DEVN specified#1	DEVN not specified#1
PriOnlineCt					N	Y	N	Y
SecOnlineCt					N	Y	N	Y
CTDelta					N	Y	N	N
MatchingPerCent					N	Y	N	N
CopyGroup	0				--	--	--	--
	n	SimplexCt			N	Y	N	Y
		DuplexCt			N	Y	N	Y
		InvalidCt			N	Y	N	Y
		PendingCt			N	Y	N	Y
		SuspendOpCt			N	Y	N	Y
		SuspendCuCt			N	Y	N	Y
		SuspendVSCt			N	Y	N	Y
		SuspendErCt			N	Y	N	Y
		TransitionCt			N	Y	N	Y
		ReversedCt			N	Y	N	Y
		SwappingCt			N	Y	N	Y
		RevrsyncCt			N	Y	N	Y
		HoldCt			N	Y	N	Y
		HoldErCt			N	Y	N	Y
		HoldTrnsCt			N	Y	N	Y
		NoDeltaCt			N	Y	N	Y
		ConslostCt			N	Y	N	Y
		CurrentTime			N	Y	N	Y
		PriOnlineCt			N	Y	N	Y
		SecOnlineCt			N	Y	N	Y
		CTTime			N	Y	N	N
		CTDelta			N	Y	N	N
		MatchingPerCent			N	Y	N	N
		Exctg	Fwd/Rev	ArbCTTime	N	Y	N	N
				JNLGValid	N	Y	N	N
				JNLGType	N	Y	N	N

REXX variables						YKQUERY		YKEWAIT	
						DEVN specified	DEVN not specified	DEVN specified#1	DEVN not specified#1
				JNLState		N	Y	N	N
				ErrorCode		N	Y	N	N
		Pair	0			--	--	--	--
			specified-pairs	State#2		Y	Y	Y	Y
				CTDelta		Y	Y	N	N
				MatchingPerCent		Y	Y	N	N
				Reversed		Y	Y	Y	Y
				CTtime		Y	Y	N	N
				Diagnosis		Y	Y	N	N
				Pri	HostStatus	Y	Y	Y	Y
				Sec	HostStatus	Y	Y	Y	Y
			other-pairs	State#2		N	Y	N	Y
				CTDelta		N	Y	N	N
				MatchingPerCent		N	Y	N	N
				Reversed		N	Y	N	Y
				CTTime		N	Y	N	N
				Diagnosis		N	Y	N	N
				Pri	HostStatus	N	Y	N	Y
				Sec	HostStatus	N	Y	N	Y

Legend:

Y: Updated

N: Not updated

--: Not applicable

#1: The REXX variables that are updated when the `ORDER` parameter is specified are the same as those when the `DEVN` parameter is specified.

#2: When copy type is SI, if an S-VOL forms a copy pair with a P-VOL other than the P-VOL in the copy group definition, you will not be able to get the correct copy pair status by using the `YKEWAIT` command. In such cases, the `YKQUERY` command might return the `SIMPLEX` status for a particular copy pair, but the `YKEWAIT` command will return a value other than the `SIMPLEX` status for the same copy pair.

REXX variables updated by YKQUERY command with the TO parameter specified

The table below shows the copy group structure's REXX variables that are updated by the `YKQUERY` command with the `TO` parameter specified. The table omits REXX variables that are not affected by the `YKQUERY` command with the `TO` parameter specified.

Table 3-19 REXX variables updated by the YKQUERY command with the TO parameter specified

REXX variables		Copy direction: Forward		Copy direction: Reverse#1	
		PRIMARY specified	SECONDARY specified	PRIMARY specified	SECONDARY specified
SimplexCt		Y	Y	Y	Y
PendingCt		Y	Y	Y	Y
DuplexCt		Y	Y	Y	Y
TransitionCt		Y	Y	Y	Y
SuspendOpCt		Y	Y	Y	Y
SuspendCuCt		Y	Y	Y	Y
SuspendVSCt		Y	Y	Y	Y
SwappingCt		F#2	Y	Y	F#2
ReversedCt		Y	Y	Y	Y
SuspendErCt		Y	Y	Y	Y
InvalidCt		Y	Y	Y	Y
RevrsyncCt		Y	Y	Y	Y
HoldCt		Y	Y	Y	Y
HoldErCt		Y	F#2	F#2	Y
HoldTrnsCt		Y	F#2	F#2	Y
NoDeltaCt		Y	F#2	F#2	Y
ConslostCt		Y	Y	Y	Y
PriOnlineCt		Y	F#2	Y	F#2
SecOnlineCt		F#2	Y	F#2	Y
CTDelta		F#4	Y#5	Y#5	F#4
MatchingPerCent		Y	F#2, #3	F#2	Y
CopyGroup	0	--	--	--	--

REXX variables					Copy direction: Forward		Copy direction: Reverse#1	
					PRIMARY specified	SECONDARY specified	PRIMARY specified	SECONDARY specified
	n	SimplexCt			Y	Y	Y	Y
		DuplexCt			Y	Y	Y	Y
		InvalidCt			Y	Y	Y	Y
		PendingCt			Y	Y	Y	Y
		SuspendOpCt			Y	Y	Y	Y
		SuspendCuCt			Y	Y	Y	Y
		SuspendVSCt			Y	Y	Y	Y
		SuspendErCt			Y	Y	Y	Y
		TransitionCt			Y	Y	Y	Y
		ReversedCt			Y	Y	Y	Y
		SwappingCt			Y	Y	Y	Y
		RevrsyncCt			Y	Y	Y	Y
		HoldCt			Y	Y	Y	Y
		HoldErCt			Y	F#2	F#2	Y
		HoldTrnsCt			Y	F#2	F#2	Y
		NoDeltaCt			Y	F#2	F#2	Y
		ConslostCt			Y	Y	Y	Y
		PriOnlineCt			Y	F#2	Y	F#2
		SecOnlineCt			F#2	Y	F#2	Y
		CurrentTime			Y	Y	Y	Y
		CTTime			F#4	Y#5	Y#5	F#4
		CTDelta			F#4	Y#5	Y#5	F#4
		MatchingPerCent			Y	F#2, #3	F#2	Y
		Exctg	Fwd	ArbCTTime	N	Y	N	Y
				JNLGValid	N	Y	N	Y
				JNLGType	N	Y	N	Y
				JNLState	N	Y	N	Y
				ErrorCode	N	Y	N	Y
			Rev	ArbCTTime	Y	N	Y	N

REXX variables						Copy direction: Forward		Copy direction: Reverse#1	
						PRIMARY specified	SECONDARY specified	PRIMARY specified	SECONDARY specified
				JNLGValid		Y	N	Y	N
				JNLGType		Y	N	Y	N
				JNLState		Y	N	Y	N
				ErrorCode		Y	N	Y	N
		Pair	0			--	--	--	--
			n	State		Y	Y	Y	Y
				CTDelta		F#4	Y#5	Y#5	F#4
				MatchingPerCent		Y	F#2, #3	F#2	Y
				Reversed		Y	Y	Y	Y
				CTTime		F#4	Y#5	Y#5	F#4
				Diagnosis		F#6, #7	Y#7	Y#7	F#6, #7
				Pri	HostStatus	Y	F#4	Y	F#4
				Sec	HostStatus	F#4	Y	F#4	Y

Legend:

Y: Updated

F: Updated to a fixed value

N: Not updated

--: Not applicable

#1: Not applicable if the copy type is ShadowImage.

#2: `0` is set for the value because information cannot be acquired.

#3: A value is set if the copy type is ShadowImage.

#4: Null is set for the value because information cannot be acquired.

#5: A value is set only if the copy type is Universal Replicator, and the consistency group timer type is SYSTEM. If information cannot be acquired, null is set for the value.

#6: `00` is set for the value.

#7: If the copy type is ShadowImage or TrueCopy, null is set for the value because information cannot be acquired.

REXX variables updated by the YKEWAIT command with the TO parameter specified

The table below shows the copy group structure's REXX variables that are updated by the `YKEWAIT` command with the `TO` parameter specified. The table omits REXX variables that are not affected by the `YKEWAIT` command.

Table 3-20 REXX variables updated by the YKEWAIT command with the TO parameter specified

REXX variables			Copy direction: Forward		Copy direction: Reverse	
			PRIMARY specified	SECONDARY specified	PRIMARY specified	SECONDARY specified
SimplexCt			Y	Y	Y	Y
PendingCt			Y	Y	Y	Y
DuplexCt			Y	Y	Y	Y
TransitionCt			Y	Y	Y	Y
SuspendOpCt			Y	Y	Y	Y
SuspendCuCt			Y	Y	Y	Y
SuspendVSCt			Y	Y	Y	Y
SwappingCt			F#1	Y	Y	F#1
ReversedCt			Y	Y	Y	Y
SuspendErCt			Y	Y	Y	Y
InvalidCt			Y	Y	Y	Y
RevrsyncCt			Y	Y	Y	Y
HoldCt			Y	Y	Y	Y
HoldErCt			Y	F#1	F#1	Y
HoldTrnsCt			Y	F#1	F#1	Y
NoDeltaCt			Y	F#1	F#1	Y
ConslostCt			Y	Y	Y	Y
PriOnlineCt			Y	F#1	Y	F#1
SecOnlineCt			F#1	Y	F#1	Y
CopyGroup	0		--	--	--	--
	n	SimplexCt	Y	Y	Y	Y
		DuplexCt	Y	Y	Y	Y
		InvalidCt	Y	Y	Y	Y

REXX variables						Copy direction: Forward		Copy direction: Reverse	
						PRIMARY specified	SECONDARY specified	PRIMARY specified	SECONDARY specified
		PendingCt				Y	Y	Y	Y
		SuspendOpCt				Y	Y	Y	Y
		SuspendCuCt				Y	Y	Y	Y
		SuspendVSCt				Y	Y	Y	Y
		SuspendErCt				Y	Y	Y	Y
		TransitionCt				Y	Y	Y	Y
		ReversedCt				Y	Y	Y	Y
		SwappingCt				Y	Y	Y	Y
		RevrsyncCt				Y	Y	Y	Y
		HoldCt				Y	Y	Y	Y
		HoldErCt				Y	F#1	F#1	Y
		HoldTrnsCt				Y	F#1	F#1	Y
		NoDeltaCt				Y	F#1	F#1	Y
		ConslostCt				Y	Y	Y	Y
		PriOnlineCt				Y	F#1	Y	F#1
		SecOnlineCt				F#1	Y	F#1	Y
		CurrentTime				Y	Y	Y	Y
		Pair	0			--	--	--	--
			n	State		Y	Y	Y	Y
				Reversed		Y	Y	Y	Y
				Pri	HostStatus	Y	F#2	Y	F#2
				Sec	HostStatus	F#2	Y	F#2	Y

Legend:

Y: Updated

F: Updated to a fixed value

--: Not applicable

#1: Because information cannot be acquired, `0` is set.

#2: Because information cannot be acquired, `null` is set.

4

CSV files used by the copy group definition file generation function

This chapter describes the CSV files used by the copy group definition file generation function.

Types of CSV files

The following table shows the CSV files used by the copy group definition file generation function:

Table 4-1 Types of CSV files

CSV file name	Description
Pair information CSV file	A CSV file in which copy pair information in a copy group container is described.
EXCTG information CSV file	A CSV file in which EXCTG information is described (only for EXCTG).
CTG information CSV file	A CSV file containing consistency group information (only for Universal Replicator).

CSV file data set formats and disk requirements

The following table shows the CSV file dataset formats that are used by the copy group definition file generation function.

Table 4-2 CSV file data set formats

Type of CSV file	DSORG	RECFM	LRECL	BLKSIZE (bytes)
Pair information CSV file	• PS • PO#	• VB • FB • V • F	128 or more	Any value
EXCTG information CSV file	• PS • PO#	• VB • FB • V • F	128 or more	Any value
CTG information CSV file	• PS • PO#	• VB • FB • V • F	128 or more	Any value

#: The `YKEXPORT` command does not support a dataset if the DSORG is PO.

The following table shows the disk requirements for CSV files. When you determine the disk capacity, take into account the need to make backup files by providing at least twice as much disk capacity as indicated.

Table 4-3 Disk requirements for CSV files

Type of CSV file	Size (bytes)
Pair information CSV file	90 x *number-of-copy-pairs*
EXCTG information CSV file	70 x *number-of-copy-groups*
CTG information CSV file	50 x *number-of-copy-groups*

Specification format for CSV files

Coding rules

This subsection describes the format to follow when writing a CSV file.

CSV files used by the `YKIMPORT` command

- Delimit item values with the comma. If there is no value for an item, you must specify a comma to represent the empty item.
- Item values can be enclosed in double-quotation marks. In this case, only values enclosed in the double-quotation marks are written into the copy group definition file.
- Commas specified within a character string enclosed in double-quotation marks are not handled as delimiters.
- If the value entered for any item (other than `Number-Of-Pairs`) is shorter than the maximum number of digits allowed for that item, the item is padded with leading zeros to the maximum length. For details about `Number-Of-Pairs`, see Specification format for a pair information CSV file on page 4-3.
- A line beginning with `//*` is handled as comment. If you wish to have a header line, specify it as a comment.
- Lower-case characters are treated as upper-case characters.
- Spaces before and after an item are ignored.
- Character encoding must be EBCDIC.

CSV files generated by the `YKEXPORT` command

- If an item has no value, the item is padded with spaces to the maximum number of digits allowed for that item.
- A header line is always inserted.
- All character strings are in upper-case letters.

Specification format for a pair information CSV file

Specify a pair information CSV file in the following format:

```
PDEVN,PSN,PCU,PCCA,SDEVN,SSN,SCU,SCCA,CTID,SubCTID,Number-Of-Pairs
```

For each item, specify the following value:

Item name	Value to be specified	Data type#1	Length (characters)
PDEVN	Device number of the primary site#2	Hexadecimal number	1-4
PSN	Storage system serial number of the primary site#2	Alphanumeric characters	1-5
PCU	Control unit number of the primary site#2	Hexadecimal number	1-2
PCCA	Command control address number of the primary site#2	Hexadecimal number	1-2
SDEVN	Device number of the secondary site#2, #4	Hexadecimal number	1-4
SSN	Storage system serial number of the secondary site#2, #4, #5	Alphanumeric characters	1-5
SCU	Control unit number of the secondary site#2, #4, #5	Hexadecimal number	1-2
SCCA	Command control address number of the secondary site#2, #4, #5	Hexadecimal number	1-2
CTID	Consistency group ID	Hexadecimal number For other than Universal Replicator: Specify in the range from 00 to 7F. For Universal Replicator: Specify in the range from 00 to FF.	1-2
SubCTID	Sub consistency group ID	Hexadecimal number Specify in the range from 00 to FF.	1-2
Number-Of-Pairs	Number of times the specified copy pair is to be repeated#3	Numeric characters Specify in the range from 1 to 99,999.	1-5

#1: For details about data types, see Table D-2 Syntax elements on page D-3.

#2: Use either of the following methods to specify P-VOLs and S-VOLs.

- Device number
- Storage system serial number, control unit number, and command control address number

If both methods are used, the device number specification takes precedence.

#3: For only part of the specified number, the volumes that exist at consecutive addresses are defined as a copy pairs. You must specify `1` even if you do not define copy pairs repeatedly.

The definition depends on the P-VOL and S-VOL specification method, as described below:

- When volumes are specified by the device number

  Volumes with consecutive device numbers are defined as a copy pair.
- When volumes are specified by the storage system serial number, control unit number and command control address number

  Volumes with consecutive control unit and command control address numbers are defined as a copy pair.

#4: You do not need to specify this item if you are using the automatic pairing function.

#5: You need to specify this item if you want to assign dummy device numbers automatically.

Example of creating multiple copy pairs in succession

A copy group definition file generated by using the following settings is displayed in the ISPF panel:

- `PDEVN: 7311`
- `SDEVN: 2A01`
- `Number-Of-Pairs: 3`

`3` is specified for `Number-Of-Pairs`, so the processing to create copy pairs will be performed three times.

If there is no volume at a consecutive address, that address is skipped. In this example, if there is no volume with a device number of `7312`, then the volumes with device numbers `7311`, `7313`, and `7314` are defined for the P-VOL.

The generated copy group definition file is displayed in the ISPF panel.

```
                              Copy Group Pair Detail             Row 1 to 3 of 3
Command ===> ___________________________________________________ Scroll ===> PAGE

                                                          2017/10/31 10:46:01

Copy Group ID : GRP1UR                                     _  Use Container
Description . . ________________________________
Copy Group Type : UR   Primary SCHSET : 0  Secondary SCHSET : 0
-------------------------------------------------------------------------------
Supported actions: d(Delete)
AC   Grp  VOLSER  Pri: SF--------------        Sec: LA--------------
     Num          Devn - SN     SSID  CU  CCA  Devn - SN     SSID  CU  CCA
_      1          7311   14002  2340  00  11-  2A01   14001  2350  00  01-
_      1          7312   14002  2340  00  12-  2A02   14001  2350  00  02-
_      1          7313   14002  2340  00  13-  2A03   14001  2350  00  03-
```

```
******************************* Bottom of data ********************************

 F1=Help      F3=Exit      F4=Attr      F5=Add       F6=Sort      F7=Backward
 F8=Forward  F12=Cancel
```

Example of using the automatic pairing function

The automatic pairing function is used if the YKIMPORT command is executed with the AUTOPAIR parameter specified and the pair information CSV file does not include information about the secondary site. However, if the pair information CSV file does include information about the secondary site, the automatic pairing function will not be used.

In the following example, automatic pairing is performed for the row in which the value of PDEVN is 7320, and a copy pair is created, consisting of a P-VOL and an S-VOL that have the same device number. For the row in which the value of PDEVN is 7321, a copy pair is created by using the volume of the specified device address as the S-VOL.

```
//* PDEVN,PSN,PCU,PCCA,SDEVN,SSN  ,SCU,SCCA,CTID,SubCTID,Number-Of-Pairs
    7320,   ,   ,    ,     ,     ,   ,    ,  01,     01,              1
    7321,   ,   ,    ,     ,14001, 10,  02,  01,     01,              1
```

The generated copy group definition file is displayed in the ISPF panel.

```
                            Copy Group Pair Detail             Row 1 to 2 of 2
 Command ===> ___________________________________________________ Scroll ===> PAGE

                                                          2017/10/31 10:46:01

 Copy Group ID : GRPUR                                    _  Use Container
 Description . . ________________________________
 Copy Group Type : UR   Primary SCHSET : 0  Secondary SCHSET : 0
 ---------------------------------------------------------------------------
 Supported actions: d(Delete)
 AC   Grp  VOLSER  Pri: SF--------------        Sec: LA--------------
      Num          Devn - SN     SSID  CU  CCA  Devn - SN     SSID  CU  CCA
 _      1          7320   14002  2340  00  11-  7320   14001  2350  10  01-
 _      1          7321   14002  2340  00  12-  7F00   14001  2350  10  02-
 ******************************* Bottom of data ********************************

  F1=Help      F3=Exit      F4=Attr      F5=Add       F6=Sort      F7=Backward
  F8=Forward  F12=Cancel
```

Example of automatically assigning a dummy device number

If the pair information CSV file includes SSN, SCU, and SCCA but not SDEVN, the device number of the P-VOL will be automatically assigned as the dummy device number of the S-VOL.

In the following example, a dummy device number is automatically assigned for the row in which the value of PDEVN is 7350. For the row in which the value of PDEVN is 7351, the specified device number is assigned to the S-VOL.

```
//* PDEVN,PSN,PCU,PCCA,SDEVN,SSN  ,SCU,SCCA,CTID,SubCTID,Number-Of-Pairs
     7350,   ,   ,    ,     ,1400F, F0,  20,  01,     01,              1
     7351,   ,   ,    , 7351,1400F, F0,  21,  01,     01,              1
```

The generated copy group definition file is displayed in the ISPF panel.

```
                              Copy Group Pair Detail             Row 1 to 2 of 2
 Command ===> ___________________________________________________ Scroll ===> PAGE

                                                              2017/10/31 10:46:01

 Copy Group ID : GRPUR                                        _  Use Container
 Description . . ________________________________
 Copy Group Type : UR   Primary SCHSET : 0  Secondary SCHSET : 1
 ------------------------------------------------------------------------------
 Supported actions: d(Delete)
 AC   Grp  VOLSER  Pri: SF--------------        Sec: LA--------------
      Num          Devn - SN     SSID  CU  CCA  Devn - SN     SSID  CU  CCA
 _      1          7350   14002  2340  00  11-  7350   1400F  23F0  F0  20-
 _      1          7351   14002  2340  00  12-  7351   1400F  23F0  F0  21-
 ****************************** Bottom of data ********************************

  F1=Help      F3=Exit      F4=Attr      F5=Add       F6=Sort      F7=Backward
  F8=Forward  F12=Cancel
```

#: Make sure that the value of a device number of a volume joined in a copy pair at the primary site is not assigned to a dummy device number of the secondary site.

Specification format for an EXCTG information CSV file

Specify an EXCTG information CSV file in the following format:

```
PSN,SSN,CTID,SubCTID,FEXCTG,FSpDKC,FarbCDEV,REXCTG,RSpDKC,RarbCDEV
```

For each item, specify the following value:

Item name	Value to be specified	Data type#1	Length (characters)
PSN	Storage system serial number of the primary site (required)	Alphanumeric characters	1-5
SSN	Storage system serial number of the secondary site (required)	Alphanumeric characters	1-5
CTID	Consistency group ID (required)	Hexadecimal number	1-2
SubCTID	Sub consistency group ID (required)	Hexadecimal number	1-2
FEXCTG	EXCTG ID in the forward direction (required when operating in the forward direction)	Numeric characters Specify in the range from 0 to 3.	1

Item name	Value to be specified	Data type#1	Length (characters)
FSpDKC	S (required when operating in the forward direction)#2	--	1
FarbCDEV	Arbitration command device number of the secondary site (required when operating in the forward direction)	Hexadecimal number	1-4
REXCTG	EXCTG ID in the reverse direction (required when operating in the reverse direction)	Numeric characters Specify in the range from 0 to 3.	1
RSpDKC	S (required when operating in the reverse direction)#3	--	1
RarbCDEV	Arbitration command device number of the primary site (required when operating in the reverse direction)	Hexadecimal number	1-4

#1: For details about data types, see Table D-2 Syntax elements on page D-3.

#2: Indicates that the storage system specified in SSN is to be specified as the supervisor disk controller of the secondary site.

#3: Indicates that the storage system specified in PSN is to be specified as the supervisor disk controller of the primary site.

Note:

- On a single line, you must specify either the supervisor disk controller or the arbitration command device number. They cannot both be specified on the same line.
- Make sure that only one of the following copy direction settings is used in the EXCTG information CSV file:
  - Forward direction only
  - Reverse direction only
  - Forward and reverse directions

Tip: If lines with the same content are specified, the YKIMPORT command outputs the YKJ257E message and ends in an error.

Specification format for a CTG information CSV file

Specify a CTG information CSV file in the following format:

```
PSN,SSN,CTID,SubCTID,PATHID
```

For each item, specify the following values.

Item name	Value to be specified	Data type#1	Length (characters)
PSN	Serial number of the primary site storage system (required)	Alphanumeric characters	1-5
SSN	Serial number of the secondary site storage system (required)	Alphanumeric characters	1-5
CTID	Consistency group ID (required)	Hexadecimal number	1-2
SubCTID	Sub consistency group ID (required)	Hexadecimal number	1-2
PATHID	Path group ID (required)	Hexadecimal number	1-2

#: For details about data types, see Table D-2 Syntax elements on page D-3.

Tip:

- If lines with the same content are specified, the `YKIMPORT` command outputs the `YKJ274E` message and ends in an error.
- If a line in the pair information CSV file does not have a matching line in the CTG information CSV file, `0` is set for the path group ID of the copy group definition to which the copy pair information belongs.

Examples of CSV files

CSV files used by the YKIMPORT command

This example presents the pair information CSV file, EXCTG information CSV file, and CTG information CSV file that are required for defining the copy group configuration shown in the figure below. Insert spaces appropriately. The first line is a header (comment).

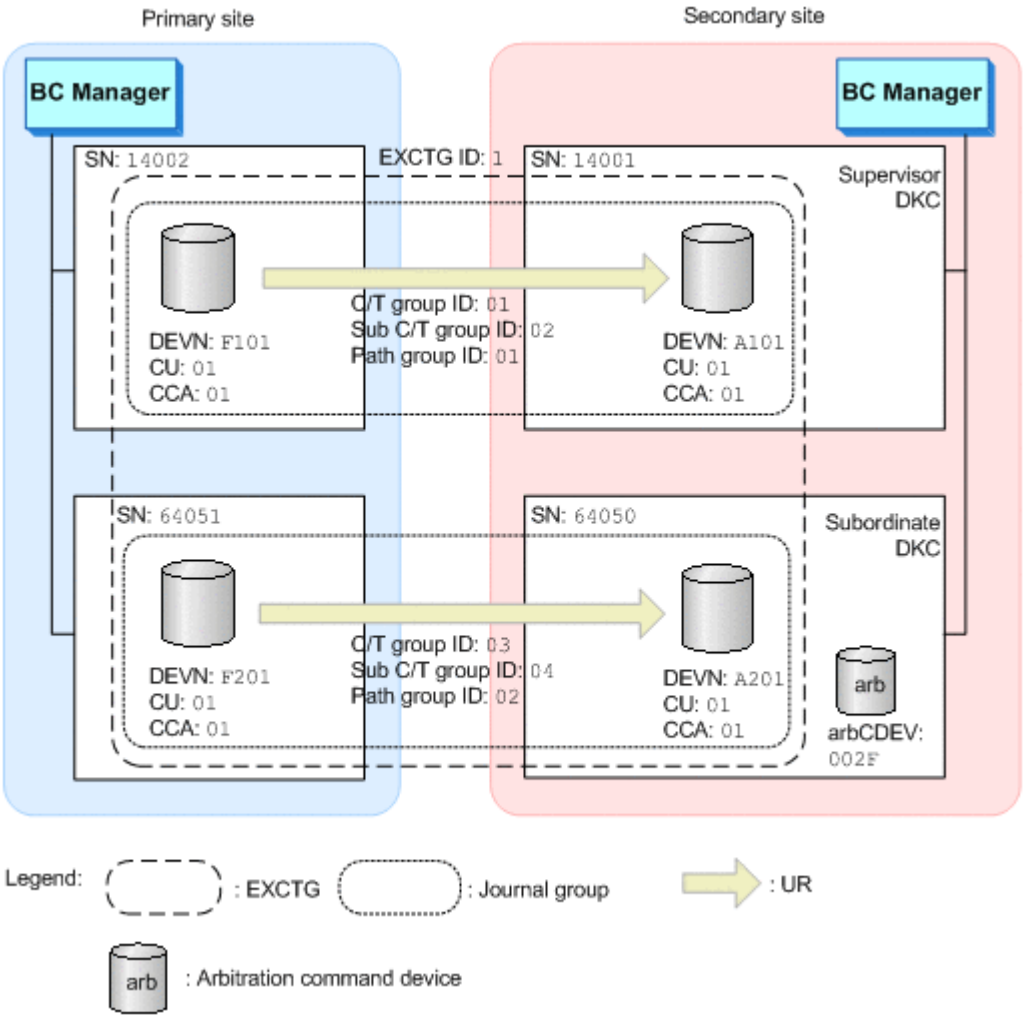


Figure 4-1 Example of a 4x4 configuration that can be defined by using the YKIMPORT command

- Pair information CSV file

```
//*PDEVN,PSN  ,PCU,PCCA,SDEVN,SSN  ,SCU,SCCA,CTID,SubCTID,Number-Of-Pairs
   F101 ,     ,   ,    ,A101 ,     ,   ,    ,01  ,02     ,1
   F201 ,     ,   ,    ,A201 ,     ,   ,    ,03  ,04     ,1
```

- EXCTG information CSV file

```
//*PSN  ,SSN  ,CTID,SubCTID,FEXCTG,FSpDKC,FarbCDEV,REXCTG,RSpDKC,RarbCDEV
   14002,14001,01  ,02     ,1     ,S     ,        ,      ,      ,
   64051,64050,03  ,04     ,1     ,      ,002F    ,      ,      ,
```

- CTG information CSV file

```
//*PSN  ,SSN  ,CTID,SubCTID,PATHID
   14002,14001,01  ,02     ,01
   64051,64050,03  ,04     ,02
```

CSV files created by the YKEXPORT command

This example shows a pair information CSV file, an EXCTG information CSV file, and a CTG information CSV file created by using the `YKEXPORT` command, given the copy group configuration shown in *Figure 3-1*. The first line is always a header line (comment).

- Pair information CSV file

```
//*PDEVN,PSN,PCU,PCCA,SDEVN,SSN,SCU,SCCA,CTID,SubCTID,Number-Of-Pairs
F101,14002,01,01,A101,14001,01,01,01,02,1
F201,64051,01,01,A201,64050,01,01,03,04,1
```

```
//*PDEVN,PSN,PCU,PCCA,SDEVN,SSN,SCU,SCCA,CTID,SubCTID,Number-Of-
Pairs
F101,14002,01,01,A101,14001,01,01,01,02,1
F201,64051,01,01,A201,64050,01,01,03,04,1
```

- EXCTG information CSV file

```
//*PSN,SSN,CTID,SubCTID,FEXCTG,FSpDKC,FarbCDEV,REXCTG,RSpDKC,RarbCDEV
14002,14001,01,02,1,S,    , , ,
64051,64050,03,04,1, ,002F, , ,
```

- CTG information CSV file

```
//*PSN,SSN,CTID,SubCTID,PATHID
14002,14001,01,02,01
64051,64050,03,04,02
```

5

BCM Monitor parameter files

This chapter contains an overview of and the format of BCM Monitor parameter files.

Overview of BCM Monitor parameter files

This section describes the parameter files used with BCM Monitor.

Content of the BCM Monitor parameter files

The following table lists and describes the parameter files used with BCM Monitor.

Table 5-1 Parameter files used with BCM Monitor

Parameter file	Description
YKMONOPT file	Specifies the option information required for starting BCM Monitor.
YKMONCG file	Specifies the copy groups to be monitored by BCM Monitor and operation details (actions).

Dataset format

The following table shows the dataset format of BCM Monitor parameter files.

Table 5-2 Dataset format of BCM Monitor parameter files

Parameter file	DSORG	RECFM	LRECL (bytes)	BLKSIZE (bytes)
YKMONOPT file	PS or PO	V, VB, F, or FB	80 or more	Multiple of `LRECL`
YKMONCG file	PS or PO	V, VB, F, or FB	80 or more	Multiple of `LRECL`

Format of parameter explanations

Specifying parameters

For details on the symbols and syntax elements used to explain parameter syntax, see Conventions in syntax explanations on page D-2.

Parameter specifications across multiple lines

To have a parameter specification span across multiple lines, specify the continuation symbol at the end of each line (except the last line). The following table lists and describes the types of continuation symbols.

Table 5-3 Types of continuation symbols

Continuation symbol	Continuation handling method
Minus sign (–)	Except for when another continuation symbol follows this symbol, the specification is continued from the leftmost column of the next line, including any consecutive spaces.
Plus sign (+)	Except for when another continuation symbol follows this symbol, the specification is continued from the leftmost column of the next line, exluding any consecutive spaces.

If both a continuation symbol and a comment symbol are specified on the same line, the comment symbol takes precedence.

No more than one parameter can be specified per line. When a continuation symbol is used, the next line is treated as part of the same line.

Maximum number of characters per line

Even with the use of continuation symbols, the maximum number of characters per line is 32,760.

Specifying comments

Specify a comment symbol (* or #) at the beginning of a line or anywhere in a line that follows a space, and then specify any comments after the comment symbol. Any characters following a comment symbol are not treated as part of the parameter.

The comment symbols (* and #) have no functional difference.

YKMONOPT file

This section describes the YKMONOPT file.

Structure of the YKMONOPT file

The following figure shows the structure of parameters in the YKMONOPT file.

If the same parameter is specified multiple times, the last time the parameter is specified takes effect.

Parameters details

Format

```
[CYCLETIME=cycle-time]
[WAITTIMEOUT=timeout-value]
[MSGLEVEL=SYSTSPRT-message-level,console-message-level]
[ONACTIONERROR={SKIPONLY|STOP|EXIT(return-code)}]
```

Information to be set

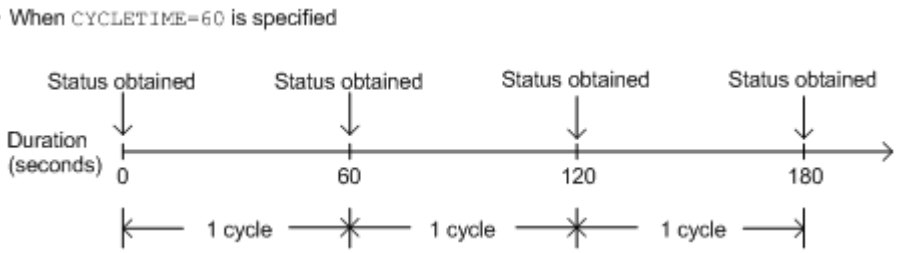
This parameter file sets the option information required for starting BCM Monitor.

Parameters

CYCLETIME=*cycle-time* ~ <numeric character>((10 to 999999))<<300>>

Specifies the cycle time in seconds for monitoring the copy group status.

The following figure shows the concept of the copy group status monitoring cycle.



If the specified value is from 0 to 9, 10 seconds is used for CYCLETIME.

WAITTIMEOUT=*timeout-value* ~ <numeric character>((0 to 9999))<<180>>

Specifies the default timeout value in minutes to use when no timeout value is specified for the YKEWAIT command in the ACTION=WAITFOR parameter in the YKMONCG file. This value is also used as the timeout value for the YKEWAIT command, which is issued when the CGSTARTUPSTATUS parameter is specified in the YKMONCG file.

MSGLEVEL=*SYSTSPRT-message-level,console-message-level* ~ <<INFO,CONS>>

Specifies the message level of the messages to be output to SYSTSPRT and the console.

The following table lists the values that can be specified for the message level and the messages that are output for each level.

Table 5-4 Values that can be specified for the message level and the messages that are output for each level

Message level	Messages that are output
CONS	YK80*nnZ*, YK81*nnZ*
ERROR	YK80*nnZ*, YK81*nnZ*, YK82*nnZ*
STATUS	YK80*nnZ*, YK81*nnZ*, YK82*nnZ*, YK83*nnZ*
INFO	YK80*nnZ*, YK81*nnZ*, YK82*nnZ*, YK83*nnZ*, YK84*nnZ*

The messages that are output are as follows:

- YK80*nnZ*: These are messages that are output regardless of the specified message level. However, note that some messages might be output only to SYSTSPRT or the console.
- YK81*nnZ*: These are messages with the highest level of importance.
- YK82*nnZ*: These are error messages.
- YK83*nnZ*: These are messages that report statuses.
- YK84*nnZ*: These are information messages.

ONACTIONERROR={SKIPONLY|STOP|EXIT(*return-code*)} ~ <<SKIPONLY>>

Specifies the default error action to be used when no error action is specified in the ACTION parameter in the YKMONCG file.

SKIPONLY
: Skips the cycle where an error occurred, but starts monitoring again from the next cycle.

STOP
: Places the monitoring status of all copy groups specified in the CGID parameter to INACTIVE.

EXIT(*return-code*) to <numeric character> ((0 to 4095))
: Stops BCM Monitor with the specified return code. We recommend that you specify a value other than 0, 4, 8, or 12 because these numbers are already used as BCM Monitor return codes.

Notes

- Depending on the configuration of copy groups and the information specified in the YKMONCG file, the copy group status monitoring cycle might exceed the value specified in the CYCLETIME parameter.
- Even if you choose to omit all the parameters, you still need to create an empty YKMONOPT file.
- You can decrease the amount of log data to be output by specifying CONS for the SYSTSPRT message level in the MSGLEVEL parameter. However,

you might not be able to identify the cause of an error if a problem occurs.

Example

This example has the following operating environment:

- Copy group monitoring cycle time: 600 seconds
- `WAITTIMEOUT` value: 60 minutes
- Message level output to `SYSTSPRT`: `STATUS`
- Message level output to the console: `CONS`
- `ONACTIONERROR` value: `STOP`

```
CYCLETIME=600
WAITTIMEOUT=60
MSGLEVEL=STATUS,CONS
ONACTIONERROR=STOP
```

YKMONCG file

This section describes the YKMONCG file.

Structure of the YKMONCG file

The following figure shows the structure of parameters in the YKMONCG file.

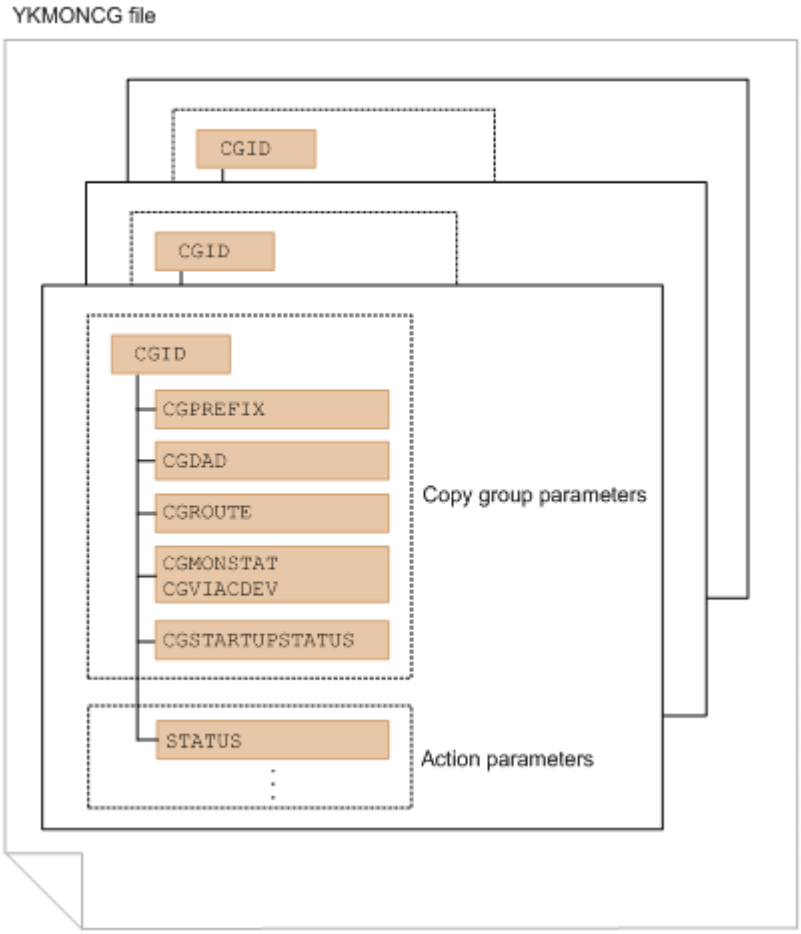


Figure 5-1 Structure of parameters in the YKMONCG file

Note the following when specifying parameters:

- The parameters can be specified for each copy group (CGID).
- If a copy group parameter that is not a `CGID` parameter is specified more than once under a single `CGID` parameter, the last time the parameter is specified takes effect.
- You can specify more than one `STATUS` parameter under a single `CGID` parameter.
- An error occurs if more than one `CGID` parameter with the same copy group ID is specified.
- An error occurs if the first `CGID` parameter is preceded by another parameter.

The following subsections describe the copy group parameters and the action parameters in detail.

Copy group parameters

Format

```
CGID=copy-group-ID
CGPREFIX=prefix
CGDAD=DADID
[CGROUTE=route-list-ID[,{route-label|'*'}]
 [CGVIACDEV={Y|N}]
]
[CGMONSTAT={ACTIVE|INACTIVE}]
[CGSTARTUPSTATUS=startup-status,startup-action[,NOCANCEL]]
```

Information to be set

You can specify the startup status of a copy group that you want to monitor, and the startup action to be executed if the copy group is not in startup status.

The table below lists the values that can be specified for the startup status and startup action.

Table 5-5 Values that can be specified in the startup status and startup action parameters

Item	Value
Startup status	SIMPLEX
	DUPLEX
	SUSPOP
	HOLD
Startup action	EXIT
	STOP
	ADJUST
	EXEC

Parameters

CGID=*copy-group-ID*

Specifies the copy group ID.

CGPREFIX=*prefix*

Specifies the prefix of the copy group definition file for the copy group.

CGDAD=*DADID*

Specifies the local device address domain ID of the copy group.

CGROUTE=*route-list-ID*[,{*route-label*|'*'}]

Specifies the route list ID to be used during monitoring.

If this parameter is omitted, no route list is used during monitoring.

If a route label is specified, the command device with the specified route label is used.

If * is specified, all command devices are used regardless of whether they have the route label.

If both the route label and * are omitted, command devices with no route label are used.

CGVIACDEV={Y|N}

Specifies the method for issuing commands to Gen'ed volumes.

Y
: Commands are issued to Gen'ed volumes via command devices.

N
: Commands are issued directly to Gen'ed volumes without going through a command device.

CGMONSTAT={ACTIVE|INACTIVE}

Specifies the monitoring status of the copy group (whether to monitor the copy group).

ACTIVE
: Monitors the copy group.
If you specify ACTIVE for more than one copy group, the first copy group that is specified will be monitored. When the status of this copy group changes to INACTIVE while BCM Monitor is running, the next copy group for which ACTIVE is specified is placed in the monitoring status.

INACTIVE
: Does not monitor the copy group.

CGSTARTUPSTATUS=*startup-status*,*startup-action*[,NOCANCEL]

If this parameter is specified and the copy group status is not the specified startup status when BCM Monitor starts, the specified startup action is executed.

The processing of this parameter is also for copy groups that has ACTIVE or INACTIVE specified for the CGMONSTAT parameter.

The YKSUSPND command with the CANCEL parameter specified is executed if all of the following conditions are satisfied:

- The copy group is a ShadowImage consistency group.

- DUPLEX is specified as the startup status.
- The status of the copy group is DUPLEX, or ADJUST is specified as the startup action.
- NOCANCEL is not specified.

If you do not want to execute the YKSUSPND command with the CANCEL parameter specified, specify NOCANCEL.

If the copy group contains a copy pair in the TRANS or HOLDTRNS status, CGSTARTUPSTATUS parameter processing is executed after the following processing is performed.

- When there is a copy pair in the TRANS status:

  The YKEWAIT GOTO(SUSPEND) TIMEOUT(WAITTIMEOUT) command is executed.
- When there is a copy pair in the HOLDTRNS status:

  The YKEWAIT GOTO(HOLD) TIMEOUT(WAITTIMEOUT) command is executed.

The value for WAITTIMEOUT is the value specified for the WAITTIMEOUT parameter in the YKMONOPT file.

startup-status

Checks whether all the copy pair statuses in the copy group are the specified startup status. The permitted values are SIMPLEX, DUPLEX, SUSPOP, or HOLD.

startup-action

Specifies the action to be executed if the copy group contains a copy pair that is not in the specified startup status. The permitted values are as follows:

EXIT(*return-code*) ~ <numeric characters> ((0 to 4095))

Stops BCM Monitor with the specified return code. We recommend that you specify a value other than 0, 4, 8, or 12 because these numbers are already used as BCM Monitor return codes.

STOP

Changes the monitoring status of all the copy groups specified in the CGID parameter to INACTIVE.

ADJUST

Changes the copy pair status to the specified startup status.

Processing depends on the status of copy pairs in the copy group. For details on the processing for changing the status to the startup status, see Processing for changing to the startup status on page 5-11.

EXEC(*script-name*[,'*user-parameter*'])

Runs the script specified for *script-name* by using the EXEC command of TSO/E.

script-name

Specifies the name of the script to run in accordance with the specification of the EXEC command.

user-parameter ~ <up to 256 characters of command parameter string>

Specifies the character string to be passed to the script as a sixth argument.

BCM Monitor will wait for the script to be completed.

Tip: For processing that takes time, we recommend starting a separate job from a script.

BCM Monitor executes the EXEC command of TSO/E in the following format:

EXEC *script-name* '*copy-group-ID*,*prefix*,*DADID*,[*route-list-ID*],*startup-status*[,'*user-parameter*']'

The value specified as the parameter in the YKMONCG file is set as the argument of the EXEC command.

Specify the return codes of the script as follows:

- When the script ends normally: 0
- When the script ends abnormally: 1 to 999

  Note that we recommend not using 12 because it is already used as the return code of the EXEC command of TSO/E.

The EXEC command of TSO/E returns the return code of the script to BCM Monitor. BCM Monitor ends with the return code 0 when the script ends normally and ends with the return code 4 when the script ends abnormally.

NOCANCEL

Does not execute the YKSUSPND command with the CANCEL parameter specified. You can specify this value only if you specified DUPLEX as the startup status.

Processing for changing to the startup status

This subsection describes the processing for changing the copy group to the startup status when ADJUST is specified for the CGSTARTUPSTATUS parameter.

The copy group is sequentially searched for a copy pair in the status indicated in the *Copy pair status* column in the following table. If such a copy pair with the indicated status is found, the processing in the *Processing* column is performed for the copy group.

Table 5-6 Processing for the specified startup status

Specified startup status	Copy pair status	Processing
SIMPLEX	All SIMPLEX	Does nothing.

Specified startup status	Copy pair status	Processing
	SWAPPING	Places the monitoring status of all copy groups specified in the CGID parameter to INACTIVE.
	TRANS	
	INVALID	
	SUSPVS	
	REVRSY	
	CONSLOST	
	PENDING	Executes the following commands: 1. YKDELETE 2. YKEWAIT GOTO(SIMPLEX)
	DUPLEX	
	SUSPOP	
	SUSPCU	
	SUSPER	
	HOLD	
	HOLDER	
	HOLDTRNS	
	NODELTA	
DUPLEX	All DUPLEX	Does nothing.
	PENDING	
	SIMPLEX	Places the monitoring status of all copy groups specified in the CGID parameter to INACTIVE.
	SWAPPING	
	SUSPER	
	TRANS	
	HOLD	
	HOLDER	
	HOLDTRNS	
	NODELTA	
	REVRSY	
	INVALID	
	CONSLOST	
	SUSPOP	Executes the following commands: 1. YKRESYNC 2. YKEWAIT GOTO(DUPLEX)
	SUSPCU	
	SUSPVS	
SUSPOP	All SUSPOP	Does nothing.
	SUSPVS	

Specified startup status	Copy pair status	Processing
	SIMPLEX	Places the monitoring status of all copy groups specified in the CGID parameter to INACTIVE.
	SWAPPING	
	REVRSY	
	SUSPER	
	TRANS	
	HOLD	
	HOLDER	
	HOLDTRNS	
	NODELTA	
	INVALID	
	CONSLOST	
	DUPLEX	Executes the following commands: 1. YKRESYNC 2. YKEWAIT GOTO(DUPLEX) 3. YKSUSPND 4. YKEWAIT GOTO(SUSPEND)
	PENDING	
	SUSPCU	
HOLD	All HOLD	Does nothing.
	SIMPLEX	Places the monitoring status of all copy groups specified in the CGID parameter to INACTIVE.
	DUPLEX	
	PENDING	
	SWAPPING	
	SUSPOP	
	SUSPCU	
	SUSPER	
	TRANS	
	HOLDTRNS	
	INVALID	
	SUSPVS	
	REVRSY	
	NODELTA	
	CONSLOST	
	HOLDER	Executes the following commands: 1. YKRESYNC PREPARE 2. YKEWAIT GOTO(HOLD)

Action parameters

An action parameter specifies an action for the copy group.

Format

```
[STATUS=target-status,ACTION=action;[error-action;]]...
```

Information to be set

Specifies the target status, action, and error action for the copy group.

If the copy group is in the specified target status, the specified action will be executed. If the action execution results in an error, the specified error action will be executed.

If you want to execute multiple actions, specify the parameters with the same target status in the order you desire. An example is shown below:

```
STATUS=SUSPOP,ACTION=RESYNC(MYSI,0,'FORWARD');
STATUS=SUSPOP,ACTION=WAITFOR(MYSI,DUPLEX);
STATUS=SUSPOP,ACTION=SUSPEND(MYSI,'FORWARD');
STATUS=SUSPOP,ACTION=WAITFOR(MYSI,SUSPEND);
```

The table below shows the combinations of target statuses and actions that can be specified.

Table 5-7 Combinations of target statuses and actions that can be specified

Target status	Action											
	NOP	EXIT	REPORT	WAIT FOR	RESYNC	SUSPEND	DELETE	MAKE	SEND MSG	STOP POINT	PAUSE	EXEC
INVALID	Y	Y	Y	N	N	N	N	N	Y	Y	Y	Y
CONSLOST	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	Y
SUSPER	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
NODELTA	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
HOLDER	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
SUSPCU	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
SIMPLEX	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y
PENDING	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	Y
TRANS	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y
HOLDTRNS	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	Y
REVRSY	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	Y
SUSPVS	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
SUSPOP	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
HOLD	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
SWAPPING	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y

Target status	Action											
	NOP	EXIT	REPORT	WAIT FOR	RESYNC	SUSPEND	DELETE	MAKE	SEND MSG	STOP POINT	PAUSE	EXEC
DUPLEX	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y

Legend:

Y: This combination can be specified.

N: This combination cannot be specified.

Parameters

target-status

Specifies the status of the copy group on which the action is to be executed. For the specifiable values, see Table 5-7 Combinations of target statuses and actions that can be specified on page 5-14.

For details on how the copy group status is determined when there are multiple copy pair statuses in the copy group, see When there are multiple copy pair statuses in a copy group on page 5-20.

action

Specifies the action to be executed if the copy group is in the target status. The copy group specified in the YKMONCG file can be specified for the copy group ID in the `ACTION` parameter. This copy group can be specified for copy group that has `ACTIVE` or `INACTIVE` status specified for `CGMONSTAT` parameter.

The following table lists and describes the values that can be specified as actions.

Table 5-8 Values that can be specified as actions

Specifiable value	Overview
`NOP`	Does nothing.
`EXIT(`*`return-code`*`)`	Stops BCM Monitor.
`REPORT(`*`copy-group-ID`*`[,{SUMMARY|DETAIL|STATS|RPO}][,{CONS|ERROR|STATUS|INFO}]])`	Outputs report information.
`WAITFOR(`*`copy-group-ID`*`,{DUPLEX|SUSPEND|SIMPLEX|SUSPVS|HOLD}[,`*`timeout-value`*`])`	Executes the `YKEWAIT` command.
`RESYNC(`*`copy-group-ID`*`,`*`command-wait-time`*`[,'`*`command-parameter`*`'])`	Executes the `YKRESYNC` command.
`SUSPEND(`*`copy-group-ID`*`[,'`*`command-parameter`*`'])`	Executes the `YKSUSPND` command.

Specifiable value	Overview
DELETE(*copy-group-ID*)	Executes the YKDELETE command.
MAKE(*copy-group-ID*[,'*command-parameter*'])	Executes the YKMAKE command.
SENDMSG(*output-message*,{CONS|ERROR|STATUS|INFO})	Outputs the specified character string as a message.
STOPPOINT(*label-name*)	Specifies the point at which BCM Monitor is to be stopped or sleeped.
PAUSE(*sleep-time*)	Sleeps BCM Monitor.
EXEC(*script-name*[,'*user-parameter*'])	Runs the script specified for *script-name*.

Below are details about the values that can be specified as actions.

NOP

Does nothing.

EXIT(*return-code*) ~ <numeric characters> ((0 to 4095))

Stops BCM Monitor with the specified return code. We recommend that you specify a value other than 0, 4, 8, or 12 because these numbers are already used as BCM Monitor return codes.

REPORT(*copy-group-ID*[,{SUMMARY|DETAIL|STATS|RPO}[,{CONS|ERROR|STATUS|INFO}]])

Outputs report information for the specified copy group.

{SUMMARY|DETAIL|STATS|RPO}

Specifies the type of report information:

SUMMARY

Outputs summary information about the copy group.

DETAIL

Outputs detailed information about the copy group.

STATS

Outputs operating information for the copy group. This can only be used for the Universal Replicator copy types.

RPO

Outputs consistency information for the copy group. This can only be used for the Universal Replicator copy types.

{CONS|ERROR|STATUS|INFO}

Specifies the message level of the messages that are to be output as report information. For details on which messages are output for which message level settings, see Table 5-4 Values that can be

specified for the message level and the messages that are output for each level on page 5-5.

WAITFOR(*copy-group-ID*,{DUPLEX|SUSPEND|SIMPLEX|SUSPVS|HOLD}[,*timeout-value*])

Executes the YKEWAIT command for the specified copy group and waits until the status changes to the copy group status specified in this parameter. Note that if the specified timeout value is reached before the specified status is obtained or if an invalid status results, the error action is executed. For details on invalid statuses, see Table 2-36 Invalid status for each value specifiable in the GOTO parameter on page 2-75.

{DUPLEX|SUSPEND|SIMPLEX|SUSPVS|HOLD}

Specifies the status of the copy group that is specified in the GOTO parameter of the YKEWAIT command. After all copy pairs in the copy group have changed to the specified status, the processing terminates normally. For details on this value, see the description of the GOTO parameter in Function on page 2-72.

timeout-value ~ <numeric character> ((0 to 9999))

Specifies (in minutes) the timeout value that is specified in the TIMEOUT parameter in the YKEWAIT command. If you omit this value, the value specified for the WAITTIMEOUT parameter in the YKMONOPT file is used. For details on this value, see the description of the TIMEOUT parameter in Function on page 2-72.

RESYNC(*copy-group-ID*,*command-wait-time*[,'*command-parameter*'])

Executes the YKRESYNC command with the specified command parameter on the specified copy group after the specified command wait time elapses.

command-wait-time ~ <numeric character>((0 to 9999))

Specifies in minutes the wait time before the YKRESYNC command is executed.

command-parameter ~ <up to 256 characters of command parameter string>

Specifies the YKRESYNC command parameters. The STEM and MSG parameters are ignored even if they are specified. For details on the specifiable parameters, see the description of parameters in YKRESYNC command on page 2-126.

SUSPEND(*copy-group-ID*[,'*command-parameter*'])

Executes the YKSUSPND command with the specified command parameters on the specified copy group.

command-parameter ~ <up to 256 characters of command parameter string>

Specifies the parameters of the YKSUSPND command. The STEM and MSG parameters are ignored even if they are specified. For details on

the specifiable parameters, see the description of parameters in YKSUSPND command on page 2-142.

In addition to the parameters that can be specified in the YKSUSPND command, the following OFFSET parameter can also be specified.

OFFSET(*mmmm*:*ss*)

Executes a suspension using the ATTIME suspend function at the time obtained by adding the offset value to the YKSUSPND command execution time. The ATTIME parameter is valid when it is specified at the same time as the YKSUSPND command.

If you specify OFFSET, you must specify the WAITFOR action of the SUSPEND specification for the subsequent action. If the WAITFOR action of the SUSPEND specification is not specified for the subsequent action and the OFFSET value is greater than the cycle time, during the next cycle, the SUSPEND action of the OFFSET specification will be executed.

mmmm ~ <numeric characters>((0000 to 9999))

Specifies the offset value in minutes.

ss ~ <numeric characters>((00 to 99))

Specifies the offset value in seconds.

DELETE(*copy-group-ID*)

Executes the YKDELETE command on the specified copy group.

MAKE(*copy-group-ID*[,'*command-parameter*'])

Executes the YKMAKE command with the specified command parameter on the specified copy group.

command-parameter ~ <up to 256 characters of command parameter string>

Specifies the YKMAKE command parameters. The STEM and MSG parameters are ignored even if they are specified.

For details on the specifiable parameters, see the description of parameters in YKMAKE command on page 2-104.

SENDMSG(*output-message*,{CONS|ERROR|STATUS|INFO})

Outputs the character string specified for the output message as the specified message level.

output-message ~ <up to 65 characters of message string enclosed in single quotation marks>

Specifies the message to be output. To output a single quotation mark, specify two consecutive single quotation marks.

CONS

Outputs as the YK8100I message with the highest level of importance.

ERROR

Outputs as a YK8200I message, which indicates an error.

STATUS

Outputs as a YK8300I message, which reports a status.

INFO

Outputs as a YK8400I message, which indicates information.

STOPPOINT(*label-name*) ~ <label string up to 32 characters>

Specifies the label name that is to be specified in the STOP or SLEEP operator command. When the STOP or SLEEP command with a label name specified is executed, BCM Monitor stops or sleeps at the point of the label name.

PAUSE(*sleep-time*) ~ <numeric character> ((0 to 9999))

Sleeps BCM Monitor for the period specified in *sleep-time*. Specify the sleep time in minutes.

BCM Monitor is released from the sleep status once the specified sleep time has elapsed or when the WAKEUP operator command is accepted.

EXEC(*script-name*[,'*user-parameter*'])

Runs the script specified for *script-name* by using the EXEC command of TSO/E.

script-name

Specifies the name of the script to run in accordance with the specification of the EXEC command.

user-parameter ~ <up to 256 characters of command parameter string>

Specifies the character string to be passed to the script as a sixth argument.

BCM Monitor will wait for the script to be completed.

Tip: For processing that takes time, we recommend starting a separate job from a script.

BCM Monitor executes the EXEC command of TSO/E in the following format:

EXEC *script-name* '*copy-group-ID*,*prefix*,*DADID*,[*route-list-ID*],*target-status*[,'*user-parameter*']'

The value specified as the parameter in the YKMONCG file will be set for the argument of the EXEC command.

Specify the return codes of the script as follows:

- When the script ends normally: 0
- When the script ends abnormally: 1 to 999

  Note that we recommend not using 12 because it is already used as the return code of the EXEC command of TSO/E.

The EXEC command of TSO/E returns the return code of the script to BCM Monitor.

If the script ends abnormally, an error action will be executed.

error-action

Specifies the error action that is to be executed in the event that the action results in an error. If this value is omitted, the error action specified in the `ONACTIONERROR` parameter in the YKMONOPT file is executed.

Specifiable values are as follows:

`STOP`
: Places the monitoring status of all copy groups specified in `CGID` in `INACTIVE` status.

`SKIPONLY`
: Skips the cycle where an error occurred, but starts monitoring again from the next cycle.

`EXIT(`*return-code*`)` ~ <numeric characters> ((0 to 4095))
: Stops BCM Monitor with the specified return code. We recommend that you specify a value other than `0`, `4`, `8`, or `12` because these numbers are already used as BCM Monitor return codes.

When there are multiple copy pair statuses in a copy group

If there are multiple copy pair statuses in a copy group, one of the copy pair statuses is used as the copy group status to be monitored. If there is a copy pair with one of the high priority levels shown in the table below, that copy pair status is used for the copy group. For example, if there are no copy pairs in the `INVALID` status, but there is a copy pair in the `SUSPER` status, then the corresponding copy group is treated as being in the `SUSPER` status. If there are no copy pairs in the `INVALID` or `SUSPER` status, but there is a copy pair in the `NODELTA` status, then the corresponding copy group is treated as being in the `NODELTA` status.

Table 5-9 Copy pair status priority

Priority	Copy pair status
1	`INVALID`
2	`CONSLOST`
3	`SUSPER`
4	`NODELTA`
5	`HOLDER`
6	`SUSPCU`
7	`SIMPLEX`
8	`PENDING`
9	`TRANS`
10	`HOLDTRNS`
11	`REVRSY`

Priority	Copy pair status
12	SUSPVS
13	SUSPOP
14	HOLD
15	SWAPPING
16	DUPLEX

Example

The following is an example of the STATUS parameter:

```
STATUS=SUSPOP,ACTION=RESYNC(SICG,0,'FORWARD'); EXIT(64);
```

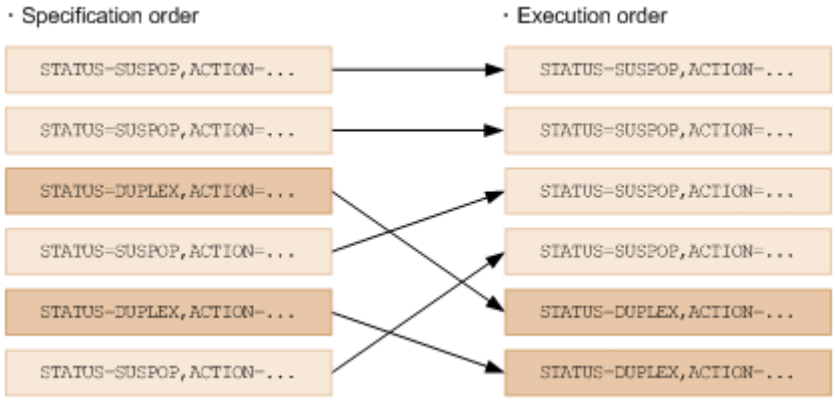
Notes

- If a specified value contains a comment symbol, enclose the entire value in single quotation marks.

  For example, to set the value #CG1 for CGID, specify the following:

  CGID='#CG1'
- When a CLI command is executed, the SELECT(COND) parameter is the default value. However, in the case of the YKSUSPND command, SELECT(ALL) is the default value.
- If the attempted action fails, summary information about the copy group will be output regardless of the specified message level.
- If you specify parameters for a single copy group without grouping them by the target status, actions are grouped by the target status.

  The following is an example of when parameters are not grouped together by the target status.



6

YKBTSCAN (scanning the volumes as a batch job)

This chapter describes how to scan the volumes as a batch job by using `YKBTSCAN`.

Functionality

By using YKBTSCAN, you can perform local scans, remote scans, and NG scans as batch jobs. You can also execute YKBTSCAN from a REXX script.

YKBTSCAN scans the volumes in the range that you entered from SYSIN, and then creates a disk configuration definition file for the detected volume. Use device numbers or volume serial numbers to specify the range of local scans. Use the serial number of the storage system, and the device addresses (control units and command control addresses) to specify the range of remote and NG scans. Because device numbers and subchannel set IDs cannot be obtained by remote scans or NG scans, dummy device numbers and dummy subchannel set IDs are assigned to the detected volumes.

If the disk configuration definition file already exists, YKBTSCAN updates the file by adding the newly obtained volume information to the existing disk configuration definition file.

To execute YKBTSCAN from a REXX script, assign (before you execute YKBTSCAN) the dataset of the parameter to be input from SYSIN by using the DD name SYSIN.

Note:

- When a volume with the same device number (DEVN) but different device addresses exists in the volume information obtained by a local scan and in the existing disk configuration definition file, the scanned volume information is added, and the existing volume information is deleted.
- When a volume with the same volume serial number (VOLSER) but different device addresses exists in the volume information obtained by a local scan and in the existing disk configuration definition file, the scanned volume information is added, and only the volume serial number in the existing volume information is deleted.

Format

There are two types of parameters of YKBTSCAN: parameters specified for YKBTSCAN, and parameters entered from SYSIN.

For details about the symbols used in parameter explanations, see Conventions in syntax explanations on page D-2.

Parameters to specify for YKBTSCAN

To execute YKBTSCAN as a batch job, specify the parameters for the PARM operand in an EXEC statement.

```
// EXEC PGM=YKBTSCAN,PARM='[STORCLAS(storage-class)] [,VOLUME(volser)][,UNIT(device-type)]
[,SPACE(quantity,increment)]'
```

To execute YKBTSCAN from a REXX script, specify the parameters in the same format as the TSO/E command.

```
Address TSO "CALL *(YKBTSCAN)[ '[STORCLAS(storage-class)] [,VOLUME(volser)][,UNIT(device-
type)][,SPACE(quantity,increment)]']"
```

STORCLAS (*storage-class*) ~ <storage class string>

Specify this parameter if you want to assign the disk configuration definition file to a specific storage class.

VOLUME (*volser*) ~ <volume serial number string>

Specify this parameter if you want to assign the disk configuration definition file to a specific volume. Only one volume can be specified.

UNIT (*device-type*) ~ <device type string>

Specify this parameter if you want to assign the disk configuration definition file to a specific device type.

SPACE (*quantity*, *increment*) ~ <numeric character>((1-16777215))

Specify the amount for the primary and secondary allocations in blocks when allocating the disk configuration definition file. One block is 4,096 bytes.

If you do not specify this parameter, the capacity of the disk configuration definition file is automatically calculated and allocated as the primary quantity.

Parameters entered from SYSIN

Format

Common format

```
PREFIX(prefix)
DAD(local-DADID)
[ROUTE(route-list-ID[,{route-label|*}])]
```

Format for local scans

```
{DEVN([s]nnnn[:[s]nnnn][,[s]nnnn[:[s]nnnn]]...) [SCHSET(ALL)]|
VOLSER('volser'[:'volser'][,'volser'[:'volser']]...)}...
```

Format for remote scans

```
RDAD(remote-DADID)
SN(nnnnn) [RANGE(nnnn[:nnnn])] [DUMMY([s]nnnn[,CCA])]
[SN(nnnnn) [RANGE(nnnn[:nnnn])] [DUMMY([s]nnnn[,CCA])]]...
[RENUM]
```

Format for NG scans

```
NGDAD(Non-Gen'ed-DADID)
SN(nnnnn) [RANGE(nnnn[:nnnn])] [DUMMY([s]nnnn[,CCA])]
```

```
[SN(nnnnn) [RANGE(nnnn[:nnnn])] [DUMMY([s]nnnn[,CCA])]]...
[RENUM]
```

Parameters

PREFIX(*prefix*) ~ <PREFIX string>

Specify the prefix in the disk configuration definition file.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

DAD(*local-DADID*) ~ <DAD string>

Specify the current host's device address domain ID.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

ROUTE(*route-list-ID*[,{*route-label*|*}]) ~ <ROUTE string of 8 or fewer characters, ROUTELABEL string of 8 or fewer characters>

Specify the route list ID to be used when performing a remote scan or an NG scan.

If a route label is specified, the command device with the specified route label will be used.

If * is specified, any command device that is included in the specified route list will be used regardless of whether that command device has a route label.

If both a route label and * are omitted, command devices without a route label will be used.

You cannot omit the ROUTE parameter for remote scans. If you omit the ROUTE parameter for an NG scan, the volume detected by a local scan that is the first volume in the disk configuration definition file will be used as a command device.

DEVN([*s*]*nnnn*[:[*s*]*nnnn*][,[*s*]*nnnn*[:[*s*]*nnnn*]]...) ~ *s*: <subchannel set ID (a 1-digit hexadecimal number)>((0 to 3)), *nnnn*: <4-digit hexadecimal number>

Specify the device number of a volume to be local-scanned. To specify the range of a scan, insert a colon (:) between the first and the last device numbers for scanning. To specify ranges for multiple scans, separate the ranges by a comma (,).

When multiple subchannel sets are used, if you want to scan a specific subchannel set, specify a 5-digit number by adding the 1-digit subchannel set ID before the device number. To scan all subchannel sets, specify the DEVN parameter without specifying a subchannel set ID, and specify the SCHSET(ALL) parameter. If you specify the DEVN parameter without

specifying the subchannel set ID, but omit the `SCHSET(ALL)` parameter, volumes whose subchannel set ID is 0 will be scanned.

When specifying the range to be scanned by specifying subchannel set IDs, specify the same value for both the first and last subchannel set IDs.

SCHSET(ALL)

Specify this parameter when multiple subchannel sets are used. If you specify the `SCHSET(ALL)` parameter but do not specify a subchannel set ID for the `DEVN` parameter, the volumes in all subchannel sets will be scanned. However, if you specify a subchannel set ID, only the volumes in the specified subchannel set ID will be scanned. If you omit both the `SCHSET(ALL)` parameter and the subchannel set ID, the volumes whose subchannel set ID is 0 will be scanned.

VOLSER('*volser*'[:'*volser*'][,'*volser*'[:'*volser*']]...) ~ <6 or fewer alphanumeric characters>

Specify the volume serial number of a volume to be local-scanned. To specify the range of a scan, insert a colon (:) between the first and the last volume serial numbers for scanning. To specify ranges for multiple scans, separate the ranges by a comma (,).

Business Continuity Manager will scan online volumes corresponding to the specified volume serial numbers.

When multiple subchannel sets are used, Business Continuity Manager will scan the volumes whose device numbers are the same as those of the scanned online volumes in all subchannel sets.

RDAD(*remote-DADID*) ~ <DAD string>

Specify the device address domain ID to be used for a remote scan.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

NGDAD(*Non-Gen'ed-DADID*) ~ <DAD string>

Specify the device address domain ID to be used for an NG scan.

For details about the maximum length that can be specified, see Names of configuration files on page 3-2.

SN(*nnnnn*) ~ <5 alphanumeric characters>

Specify the serial number of the storage system to be remote-scanned or NG-scanned.

RANGE(*nnnn*[:*nnnn*]) ~ <4-digit hexadecimal number>((0000 to FEFF))<<0000:FEFF>>

Specify the four-digit value that consists of the CU number (the first two digits) of the CU to which the volume to be remote-scanned or NG-scanned belongs, and that of the CCA value (the last two digits) of the volume. To specify the range of a scan, insert a colon (:) between the first and the last volume device numbers of the volumes to be scanned.

DUMMY([*s*]*nnnn*[,CCA]) ~ *s*: <1-digit hexadecimal number>((0 to F))<<0>>, *nnnn*: <4-digit hexadecimal number>((0000 to FFFF))

Specify the dummy device number to be assigned to the first detected volume by a remote scan or an NG scan.

The dummy device numbers to be assigned to the second detected volume and the volumes thereafter will be counted up from the specified value. The first two digits of the dummy device number are counted up for each CU, and the last two digits are counted up for each volume. If you specified CCA, the CCA value of the volume is assigned to be the last two digits of the dummy device number.

You can add a 1-digit dummy subchannel set ID before the device number. The dummy subchannel set ID of the first detected volume is assigned to the second and subsequent volumes.

If a new scan is performed but the DUMMY parameter is not specified, null will be set as the dummy device number.

For details on how to assign a dummy device number, see Appendix B, Method for assigning dummy device numbers by using YKBTSCAN on page B-1.

RENUM

Specify this if you want to reassign the dummy subchannel set ID and dummy device number of a volume detected by a remote scan or an NG scan.

If you specify the RENUM parameter but omit the DUMMY parameter, the specification is invalid.

Coding rules

- For the PREFIX, DAD, ROUTE, RENUM, RDAD, and NGDAD parameters, if you specify the same parameter more than once, the value specified last takes effect.
- For the DEVN, VOLSER, and SN parameters, if you specify the same parameter more than once, all specified values take effect.
- Continuation lines cannot be specified.
- Enclose comments in /* */.

Notes

- If device addresses are duplicated in the range of a remote scan, or if device addresses are duplicated in the range of an NG scan, `YKBTSCAN` will terminate with an error.
- If you perform a scan by specifying the `RENUM` parameter, the dummy device number in the existing disk configuration definition file will change. For this reason, when you define a copy group by importing the CSV file, change the device number in the pair information CSV file as necessary. Also, pay extra attention when you perform copy group operations by specifying the device number.
- When you assign a dummy device number by specifying the `RENUM` parameter or the `CCA` of the `DUMMY` parameter, if the dummy device number to be assigned is already used, `YKBTSCAN` might terminate with an error. For details about the processing when the dummy device number is already used, see The processing when the dummy device number is already used on page B-4.
- The storage systems containing the volumes for which a local scan is to be performed must be connected to the host by using paths.

SYSIN dataset format

The following shows the data set format for the SYSIN dataset that is used in `YKBTSCAN`:

DSORG	RECFM	LRECL	BLKSIZE
• PS • PO	• VB • FB • V • F	80	Any value

Examples of input from SYSIN

The following values are used in this example:

- Prefix of the configuration file: `PREFIX1`
- Local device address domain ID: `DAD1`
- Route to be used for remote scans
  - Route list ID: `ROUTEID`
  - Route label: `RLABEL`
- Device address domain ID of the storage systems to be scanned
  - For remote scans: `RDADID`
  - For NG scans: `NGDADID`
- Serial numbers of the storage systems to be scanned
  - For remote scans: `53038`

- For NG scans: `53039`

When performing a local scan on the volumes with device numbers 1100 and 1101:

```
PREFIX(PREFIX1)
DAD(DAD1)
DEVN(1100,1101)
```

When performing a local scan on the volumes with device numbers ranging from 1100 to 1105, and the volumes with the device number 1107:

```
PREFIX(PREFIX1)
DAD(DAD1)
DEVN(1100:1105,1107)
```

When performing a local scan on the volumes with the volume serial numbers VOL001, VOL005, and VOL009, and the volumes with volume serial numbers ranging from VOL020 to VOL030:

```
PREFIX(PREFIX1)
DAD(DAD1)
VOLSER('VOL001','VOL005','VOL009')
VOLSER('VOL020':'VOL030')
```

When performing a local scan of the volumes with device numbers ranging from 1100 to 1105, and the volumes with volume serial numbers ranging from VOL001 to VOL009:

```
PREFIX(PREFIX1)
DAD(DAD1)
DEVN(1100:1105)
VOLSER('VOL001':'VOL009')
```

When performing a new remote scan on all of the volumes in the storage systems on another site, and assigning an unused value (00) to the first two digits of the dummy device number:

```
PREFIX(PREFIX1)
DAD(DAD1)
ROUTE(ROUTEID,RLABEL)
RDAD(RDADID)
SN(53038) DUMMY(0000,CCA)
```

When performing a remote scan on all of the volumes in the storage systems on the other site again, and reassigning the first two digits of the dummy device number from 10.

```
PREFIX(PREFIX1)
DAD(DAD1)
ROUTE(ROUTEID,RLABEL)
RDAD(RDADID) RENUM
SN(53038) DUMMY(1000,CCA)
```

When performing an NG scan on the volumes with the CU number 20 and CCA values ranging from 00 to FF, and volumes with the CU number 21 and CCA values ranging from 00 to FF:

```
PREFIX(PREFIX1)
DAD(DAD1)
NGDAD(NGDADID)
SN(53039) RANGE(2000:20FF) DUMMY(0F00,CCA)
SN(53039) RANGE(2100:21FF) DUMMY(1100,CCA)
```

To simultaneously perform a local scan, a remote scan, and an NG scan:

In this example, the following volumes are scanned:

- For the local scan
  Volumes with the device numbers ranging from `1100` to `1105` and volume serial numbers ranging from `VOL001` to `VOL009`
- For the remote scan
  Volumes with the CU number `30` and CCA values ranging from `00` to `FF`
- For the NG scan
  Volumes with the CU number `21` and CCA values ranging from `00` to `FF`

```
PREFIX(PREFIX1)
DAD(DAD1)
ROUTE(ROUTEID,RLABEL)
DEVN(1100:1105)
VOLSER('VOL001':'VOL009')
RDAD(RDADID)
SN(53038) RANGE(3000:30FF) DUMMY(0F00,CCA)
NGDAD(NGDADID)
SN(53039) RANGE(2100:21FF) DUMMY(1100,CCA)
```

When performing a local scan on volumes whose subchannel set ID is 0 and whose device numbers are in the range from 1100 to 1105, and on volumes whose subchannel set ID is 1 and whose device numbers are in the range from 1200 to 1205

```
PREFIX(PREFIX1)
DAD(DAD1)
DEVN(1100:1105,11200:11205)
```

When performing a local scan on volumes (of all subchannel sets) whose device numbers are in the range from 1100 to 1105, and on volumes whose volume serial numbers are in the range from VOL001 to VOL009

```
PREFIX(PREFIX1)
DAD(DAD1)
DEVN(1100:1105)
VOLSER('VOL001':'VOL009')
SCHSET(ALL)
```

When performing a new remote scan on all volumes of the storage system whose serial number is 53038 and setting the dummy device number to null

```
PREFIX(PREFIX1)
DAD(DAD1)
ROUTE(ROUTEID,RLABEL)
RDAD(RDADID)
SN(53038)
```

Return codes

The table shown below lists the return codes to be returned when YKBTSCAN terminates.

Table 6-1 YKBTSCAN return code list

Return code	Meaning
0	YKBTSCAN completed normally. The information about the detected volumes was output to the disk configuration definition file.
4	The command skipped a volume with an I/O path that was not available. The information about the volumes that was successfully detected was output to the disk configuration definition file.
8	• Because the disk configuration definition file was updated by another user, YKBTSCAN was terminated without updating the disk configuration definition file. • There was no volume in the range specified in the parameter.
16	• Termination was caused by invalid parameters. • Termination was caused by invalid processing.
36	Processing ended because two or more storage systems have the same serial number.
44	• Processing ended because a subtask could not be generated. • An error occurred during NAME/TOKEN processing.
64	An error occurred during REXX processing.
68	YKBTSCAN could not be started. The possible causes are as follows: • Not APF authorized • Not in a TSO/E environment

JCL example

The following is an example of JCL that executes YKBTSCAN:

```
//*********************************************************************
//*
//* All Rights Reserved. Copyright (c) 2013, 2021, Hitachi, Ltd.
//*
//*********************************************************************
//BTCSCANA JOB CLASS=A,MSGCLASS=A,NOTIFY=&SYSUID,TIME=1440,REGION=0M
//YKBTSCAN EXEC PGM=YKBTSCAN,PARM='SPACE(5,1)'
//SYSEXEC  DD DSN=HDSYK.VXXXXXX.HDSYEXET,DISP=SHR
//STEPLIB  DD DSN=HDSYK.VXXXXXX.HDSYLNKT,DISP=SHR
//SYSTSPRT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//SYSTSIN  DD DUMMY
//SYSIN    DD *
PREFIX(YUKON.PREF1)
DAD(DADP)
DEVN(0000,0002,0005:0007,0009)  /* DEVN specification */
VOLSER('VOL001','VOL003','VOL007':'VOL009')  /* VOLSER specification */
ROUTE(ROUTEID,ROUTE1)
RDAD(DADS)
SN(10000) RANGE(2000:21FF) DUMMY(0F00,CCA)   /* Remote SCAN specification */
NGDAD(DADNG)
SN(20000) RANGE(2000:21FF) DUMMY(1100,CCA)   /* NG SCAN specification */
/*
```

Script example

The following is an example of script that executes `YKBTSCAN`:

```
/* REXX                                                              */

say "#-- BEGIN YKBTSCAN.";

/*
 * Execute YKBTSCAN programme in a script to scan new volumes.
 * Specify parameters in the SYSIN dataset.
 */

address TSO "ALLOC DD(SYSIN) DS(USERID.SYSIN)"
address TSO "CALL *(YKBTSCAN) 'SPACE(5,1),VOLUME(BCM000)'"


say "#-- END YKBTSCAN.";
exit;
```

A

Sample scripts

This appendix provides sample scripts for Business Continuity Manager.

- YKDEMO14
- YKDEMO15
- YKDEMO16
- YKDEMO17

Lists of sample scripts

Coding examples for each CLI command are stored in the sample library HDSYSAMT as sample scripts. The following table lists the sample scripts stored in HDSYSAMT.

Table A-1 List of sample scripts

Sample script name	Overview
YKDEMO01	Uses the following CLI commands to demonstrate basic operations on copy groups: • YKLOAD • YKMAKE • YKSUSPND • YKRESYNC • YKDELETE • YKQUERY • YKEWAIT
YKDEMO02	Uses the following CLI commands to demonstrate FlashCopy® linkage: • YKFCSTAT • YKSLEEP
YKDEMO03	Uses the following CLI commands to demonstrate how to create and delete logical paths and route lists, and how to reference status information, based on the configuration file for the path set and route list: • YKLOAD • YKBLDCMD • YKBLDPTH • YKDELCMD • YKDELPTH • YKQRYDEV • YKQRYPTH
YKDEMO04	Uses the following CLI commands to demonstrate implementation of the TrueCopy consistency preservation function: • YKLOAD • YKEWAIT • YKCONMSG • YKFREEZE • YKSUSPND • YKRUN
YKDEMO05	Uses the following CLI commands to demonstrate acquiring information about copy pairs in a copy group, and acquiring operating information: • YKLOAD • YKQUERY • YKSTATS

Sample script name	Overview
YKDEMO06	Shows an example of using the YKWATCH command.
YKDEMO07	Shows an example of using the YKRECVER command.
YKDEMO08	Shows an example of failover in a 2DC configuration with HyperSwap and Universal Replicator.
YKDEMO09	Shows an example of failback in a 2DC configuration with HyperSwap and Universal Replicator.
YKDEMO10	Shows an example that directs the status of a specified device to be output to the console, using the following CLI commands: • YKQRYDEV • YKWTOMSG
YKDEMO1S	Shows an example of the startup-cataloged procedure that executes a script from the console. In this file, the following sample script is executed: • YKDEMO10
YKDEMO11	Shows an example of using the YKENV command to obtain a Business Continuity Manager environment variable in a REXX variable.
YKDEMO12	Shows an example of detecting a copy pair in the CONSLOST status in a TrueCopy copy group, dissolving the copy pair, and then re-creating the copy pair and returning the status to the DUPLEX status.
YKDEMO13	Shows an example of using the following CLI commands to acquire EXCTG information and store the information in a REXX variable: • YKLOAD • YKEWAIT • YKQEXCTG • YKSLEEP
YKDEMO14	Shows an example of using the YKGETHDA command to set a value in the disk configuration definition file to a REXX variable.
YKDEMO15	Shows an example of using the YKWTOR command.
YKDEMO16	Shows an example of using the following CLI commands to dissolve journal groups from EXCTG and to check whether all the journal groups have been dissolved: • YKLOAD • YKDEXCTG • YKQUERY • YKSLEEP
YKDEMO17	Shows an example of using the following CLI commands to acquire the number of P-VOLs, within the copy group, that are in soft fence status and SPID fence status: • YKLOAD • YKFENCE

YKDEMO01

```
/* REXX                                                               */
/**********************************************************************/
/*                                                                    */
/* All Rights Reserved. Copyright (C) 2007, 2017, Hitachi, Ltd.       */
/*                                                                    */
/**********************************************************************/
/*                                                                    */
/* YKDEMO01 - A sample demonstration script that illustrates how to   */
/*    use the Business Continuity Manager's REXX CLI commands for     */
/*    manipulation of a copy group.                                   */
/*                                                                    */
/*    This sample script uses the following CLI commands.             */
/*       - YKLOAD                                                     */
/*       - YKMAKE                                                     */
/*       - YKSUSPND                                                   */
/*       - YKRESYNC                                                   */
/*       - YKDELETE                                                   */
/*       - YKQUERY                                                    */
/*       - YKEWAIT                                                    */
/*                                                                    */
/*    This sample script assumes the following settings.              */
/*                                                                    */
/*    1) The definition files are stored in the dataset with the      */
/*       prefix "BCM.DEMO".                                           */
/*    2) TC-Sync copy group is used. The copy group ID is "MYTCS".    */
/*    3) The route list ID is "DEMORLST".                             */
/*    4) The primary Device Address Domain ID is "PRIM".              */
/*                                                                    */
/**********************************************************************/
/* Sample script begins. */
/**********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,         */
/*       please uncomment the instructions lines below.               */
/**********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

say "#-- BEGIN YKDEMO01.";
address TSO "YKENV"


/*
 * YKLOAD should always be called to make information about a copy
 * group available from the REXX environment. In this YKLOAD calling,
 * the information about "MYTCS" in "BCM.DEMO" is loaded and stored
 * into the REXX variable structure beginning with "DEMO_INFO.".
 * One or more error messages that may be generated during execution
 * of a CLI command will be stored in the message structure with the
 * prefix that is specified by the MSG parameter. In this example,
 * the message structure is assumed to have the prefix "DEMO_MSG.".
 * Notice that YKLOAD is called with "call" instruction because it is
 * a REXX subroutine, not TSO/E command.
 * If you want to issue all commands via command devices,
 * please uncomment the VIACDEV parameter.
 */
call "YKLOAD" "STEM(DEMO_INFO.) PREFIX(BCM.DEMO) GROUP(MYTCS)",
              "DAD(PRIM) MSG(DEMO_MSG.)",
              "ROUTE(DEMORLST)" /* "VIACDEV" */ ;
```

```
/*
 * Make sure that YKLOAD completed successfully. If YKLOAD failed,
 * the return value "result" is non-zero.
 */
if result /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * You should always refresh the information in the Copy Group
 * structure before calling any copy group-manipulation command such
 * as YKMAKE, YKSUSPND and so on.
 * To refresh the information, use YKQUERY.
 */
address TSO "YKQUERY STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * The return code must be checked. Notice that the return code is
 * checked to see if it is bigger than 8, not 0. In YKQUERY, the
 * return code 8 indicates that one or more volumes in the given
 * copy group are offline, which is not necessarily a bad situation.
 */
if rc > 8
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

call printCopyGroupStatus;  /* Prints the copy group status info.     */


/*
 * Alternatively, you can use YKEWAIT to retrieve the copy group
 * status information more quickly as YKEWAIT also updates the Copy
 * Group structure (but not entirely. The information items that are
 * RCU-dependant such as C/T Delta and C/T Time are not updated).
 * Refer to Business Continuity Manager Reference Guide to see how
 * YKQUERY and YKEWAIT update the Copy Group structure.
 *
 * To use YKEWAIT for the purpose of simply updating the Copy Group
 * structure, make sure the following parameter specification.
 *    - TIMEOUT parameter should have the value zero ("0") for
 *      immediate completion of YKEWAIT.
 *    - NOINVALIDCHECK parameter should be specified.
 *    - GOTO parameter should have the value SIMPLEX.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.) MSG(DEMO_MSG.) GOTO(SIMPLEX)",
            "TIMEOUT(0) NOINVALIDCHECK";

/*
 * Like YKQUERY, check the return code to see if it is bigger than 8.
 * This is because the return code 8 for YKEWAIT indicates unexpected
 * status transition. Either 8 or 4 (real time out) is likely to occur
 * when TIMEOUT parameter is set to zero.
 */
if rc > 8
then do
    call printErrorMessage;
    exit;
end;
else
```

```
    nop;

call printCopyGroupStatus;


/*
 * Establish all copy pairs in MYTCS copy group into DUPLEX.
 * It is recommended to use SELECT(COND) parameter as it lets YKMAKE
 * automatically skip a copy pair that is already established.
 */

/*
* Pre-check online volume at secondary site.
* Exclude the following comment if you want to stop this script when an
* online volume exists at the secondary site.
*/
/*
* if DEMO_INFO.SecOnlineCt /= 0 then return 4;
* else
*   nop;
*/

address TSO "YKMAKE STEM(DEMO_INFO.) MSG(DEMO_MSG.) SELECT(COND)";

/*
 * For YKMAKE, check to see if the return code is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Use YKEWAIT to wait until "MYTCS" is fully established.
 * The value for TIMEOUT is arbitrary. In this example, 30 minutes is
 * used just for instance.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.) MSG(DEMO_MSG.) GOTO(DUPLEX)",
            "TIMEOUT(30)";

/*
 * Unlike when TIMEOUT(0) parameter was used, check the return code
 * to see if it is 0 or not because any non-zero return code for
 * YKEWAIT indicates that the copy pair state transition did not
 * happen as expected.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

call printCopyGroupStatus;


/*
 * Suspend all copy pairs in MYTCS copy group.
 * Like YKMAKE, use SELECT(COND) to let YKSUSPND skip a copy pair
 * which is already being suspended.
 * Although you can omit specification of FORWARD/REVERSE parameter,
 * it is strongly recommended to specify the parameter to clarify
 * your intention.
 */
address TSO "YKSUSPND STEM(DEMO_INFO.) MSG(DEMO_MSG.) FORWARD",
```

```
            "SELECT(COND)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Wait until all copy pairs in MYTCS copy group become suspended.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.) MSG(DEMO_MSG.) GOTO(SUSPEND)",
            "TIMEOUT(30)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

call printCopyGroupStatus;


/*
 * Resynchronize all suspended copy pairs in MYTCS copy group.
 * Use SELECT(COND) parameter to let YKRESYNC skip copy pairs which
 * are already DUPLEX.
 * Just like YKSUSPND, it is recommended to explicitly specify
 * FORWARD/REVERSE parameter.
 */

/*
* Pre-check online volume at target site.
* Exclude the following comment if you want to stop this script when an
* online volume exists at the target site.
*/
/*
* if DEMO_INFO.SecOnlineCt /= 0 then return 4;
* else
*   nop;
*/

address TSO "YKRESYNC STEM(DEMO_INFO.) MSG(DEMO_MSG.) SELECT(COND)",
            "FORWARD";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Wait until all copy pairs in MYTCS copy group become DUPLEX.
 */
```

```
address TSO "YKEWAIT STEM(DEMO_INFO.) MSG(DEMO_MSG.) GOTO(DUPLEX)",
            "TIMEOUT(30)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

call printCopyGroupStatus;


/*
 * Dissolve all copy pairs in MYTCS copy group, putting them back to
 * SIMPLEX status.
 */
address TSO "YKDELETE STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Wait until all copy pairs in TCS copy group get fully dissolved.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.) MSG(DEMO_MSG.) GOTO(SIMPLEX)",
            "TIMEOUT(30)";

/*
 * Check to see if the return code is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

call printCopyGroupStatus;

say "#-- END YKDEMO01."; /* The sample script completed.              */
exit;


/*
 * printErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
printErrorMessage: procedure expose DEMO_MSG.
    do x = 1 to DEMO_MSG.0
        say "Severity = " || DEMO_MSG.x.Severity;
        say "Text     = " || DEMO_MSG.x.Text;
        say "Value    = " || DEMO_MSG.x.Value;
    end;
    return 0;
```

```
/*
 * printCopyGroupStatus: This procedure prints the status information
 *    of copy pairs in the copy group "MYTCS".
 */
printCopyGroupStatus: procedure expose DEMO_INFO.
    say DEMO_INFO.ID || " -- status information."
    say "    Simplex pairs = " || DEMO_INFO.SimplexCt;
    say "    Duplex  pairs = " || DEMO_INFO.DuplexCt;
    say "    Suspend pairs = " || DEMO_INFO.SuspendOpCt;
    return 0;
```

YKDEMO02

```
/* REXX                                                              */
/*********************************************************************/
/*                                                                   */
/* All Rights Reserved. Copyright (C) 2007, 2016, Hitachi, Ltd.      */
/*                                                                   */
/*********************************************************************/
/*                                                                   */
/* YKDEMO02 - A sample demonstration script that illustrates how to  */
/*    use the Business Continuity Manager's REXX CLI commands for    */
/*    linkage with FlashCopy.                                        */
/*                                                                   */
/*    This sample script uses the following CLI commands.            */
/*       - YKFCSTAT                                                  */
/*       - YKSLEEP                                                   */
/*                                                                   */
/*********************************************************************/
/* Sample script begins. */
/*********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,        */
/*       please uncomment the instructions lines below.              */
/*********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

say "#-- BEGIN YKDEMO02.";
address TSO "YKENV"

/*
 * The following piece of code attempts to detect completion of
 * the copy process of FlashCopy pair by using YKFCSTAT.
 * If the copy process has not completed yet, the value of "STATE0"
 * remains non-zero, so it waits for certain amount of time (in this
 * example, 1 minute) and re-attempt to detect completion of the
 * copy process. This cycle will continue for 10 times unless
 * completion of the copy process is detected.
 */
outFlag = "INLOOP";

do i = 1 to 10 while (outFlag == "INLOOP")

    /*
     * Use YKFCSTAT command to view the current status of the
     * FlashCopy processing. You may choose a volume from which
     * the status information of the current FlashCopy processing
```

```
     * is retrieved by specifying a device number of a volume with
     * "DEVN" parameter, such as "DEVN(12AB)".
     */
    address TSO "YKFCSTAT STEM(DEMO_INFO.) MSG(DEMO_MSG.) DEVN(####)";

    /* Check the return code of YKFCSTAT to see if it is 0 or not.    */
    if rc /= 0
    then do
        call printErrorMessage;
        exit;
    end;
    else
        nop;

    /*
     * DEMO_INFO.TARGET.STATE0 shows the status of a FlashCopy pair.
     * STATE0 = 0 means that there is no FlashCopy relationship so that
     * the TrueCopy pairs can be resynchronized.
     */
    if DEMO_INFO.TARGET.STATE0 = 0
    then
        outFlag = "OUTLOOP";
    else do
         /* Wait for 1 minute and re-enter the loop for YKFCSTAT.     */
        address TSO "YKSLEEP MIN(1)";

        if rc /= 0
        then do
            call printErrorMessage;
            exit;
        end;
        else
            nop;
    end;
end;

if i > 10
then
    say "FlashCopy processing has not completed.";
else
    say "FlashCopy processing has completed.";

say "#-- END YKDEMO02.";
exit;


/*
 * printErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
printErrorMessage: procedure expose DEMO_MSG.
    do x = 1 to DEMO_MSG.0
        say "Severity = " || DEMO_MSG.x.Severity;
        say "Text     = " || DEMO_MSG.x.Text;
        say "Value    = " || DEMO_MSG.x.Value;
    end;
    return 0;
```

YKDEMO03

```
/* REXX                                                               */
/*********************************************************************/
/*                                                                    */
/* All Rights Reserved. Copyright (C) 2007, 2017, Hitachi, Ltd.       */
/*                                                                    */
```

```
/*********************************************************************/
/*                                                                   */
/* YKDEMO03 - A sample demonstration script that illustrates how to  */
/*    use the Business Continuity Manager's REXX CLI commands for    */
/*    establishing and deleting routes (command devices) and logical */
/*    paths between two storage systems.                             */
/*    This sample script first establishes logical paths from the    */
/*    primary storage system to the secondary storage system. Once   */
/*    the logical paths between two storage systems are established, */
/*    the script will then build a command device in the primary     */
/*    storage system first, then a command device at the secondary   */
/*    storage system.                                                */
/*    Once the command devices are established, the sample script    */
/*    then deletes the command devices in reverse order, then finally */
/*    deletes the logical paths that it established in the beginning */
/*    of the script.                                                 */
/*                                                                   */
/*    This sample script uses the following CLI commands.            */
/*       - YKLOAD                                                    */
/*       - YKBLDCMD                                                  */
/*       - YKBLDPTH                                                  */
/*       - YKDELCMD                                                  */
/*       - YKDELPTH                                                  */
/*       - YKQRYDEV                                                  */
/*       - YKQRYPTH                                                  */
/*                                                                   */
/*    This sample script assumes the following settings.             */
/*                                                                   */
/*    1) The definition files are stored in the dataset with the     */
/*       prefix "BCM.DEMO".                                          */
/*    2) The pathset ID is "DEMOPATH". "DEMOPATH" contains the       */
/*       definition of logical paths in one direction, from the      */
/*       primary storage system to the secondary storage system.     */
/*    3) The route list ID is "DEMORLST".                            */
/*    4) The primary Device Address Domain ID is "PRIM".             */
/*                                                                   */
/*********************************************************************/
/* Sample script begins. */
/*********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,        */
/*       please uncomment the instructions lines below.              */
/*********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

say "#-- BEGIN YKDEMO03.";
address TSO "YKENV"

/*
 * YKLOAD should be called to load the information about a pathset
 * and a route list into the REXX environment.
 * If you want to issue all commands via command devices,
 * please uncomment the VIACDEV parameter.
 */
call "YKLOAD" "STEM(DEMO_INFO.) PREFIX(BCM.DEMO) PATH(DEMOPATH)",
              "DAD(PRIM) MSG(DEMO_MSG.)",
              "ROUTE(DEMORLST)" /* "VIACDEV" */ ;

/*
 * Make sure that YKLOAD completed successfully. If YKLOAD failed,
 * the return value "result" is non-zero.
 */
```

```
if result /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Now build the logical paths between the primary and the secondary
 * storage systems in direction from the primary storage system
 * to the secondary storage system.
 */
address TSO "YKBLDPTH STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Query for the information of the logical paths that were built
 * in the previous call of YKBLDPTH. The updated information will be
 * stored in the REXX variable under "DEMO_INFO.PATH".
 * You may also check the return code for being larger than 4, as
 * 4 also indicates successful completion of the command with some
 * logical paths being identified to be in invalid condition.
 */
address TSO "YKQRYPTH STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Print the information in the Path Set structure about the logical
 * paths that were built in the previous YKBLDPTH.
 * Following lines print the path type and whether it is shared.
 * Refer to the Business Continuity Manager Reference Guide for the
 * full details about information items available in the Path Set
 * structure.
 */
say "-------------------------------------";
do i = 1 to DEMO_INFO.PATH.0
    say "Path "i": type   = " || DEMO_INFO.PATH.i.type;
    say "Path "i": share? = " || DEMO_INFO.PATH.i.shared;
end;
say "-------------------------------------";


/*
 * Build the command device in the primary storage system first.
 * You must specify the serial number of the storage system with
 * "SN" parameter such as "SN(12345)".
```

```
 */
address TSO "YKBLDCMD SN(#####) MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Build the command device in the secondary storage system.
 * You must specify the serial number of the storage system with
 * "SN" parameter such as "SN(12345)".
 */
address TSO "YKBLDCMD SN(#####) MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * YKQRYDEV retrieves the information about a volume device that was
 * specified in its parameters. The following example retrieves the
 * information about the command device in the primary storage system.
 * The information is stored under "DEMO_CDEVP" as specified by the
 * STEM parameter.
 * The following code shows one way to use YKQRYDEV with SN, CU and
 * CCA parameters, such as follows:
 *    "SN(12345) CU(10) CCA(20)"
 */
address TSO "YKQRYDEV STEM(DEMO_CDEVP.) SN(#####) CU(##) CCA(##)",
            "MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Print the information in the command device in the primary
 * storage system.
 * Refer to the Business Continuity Manager Reference Guide for the
 * full details about information items available by YKQRYDEV.
 */
say "--------------------------------------";
say "CDEV(Primary) DKC's SSID = " || DEMO_CDEVP.SSID;
say "CDEV(Primary) is valid?  = " || DEMO_CDEVP.Cdev.Info;
say "CDEV(Primary) is status  = " || DEMO_CDEVP.Cdev.Status;
say "CDEV(Primary)'s APID     = " || DEMO_CDEVP.Cdev.APID;
```

```
say "-------------------------------------";


/*
 * The following example retrieves the information about the command
 * device in the secondary storage system.
 * The information is stored under "DEMO_CDEVS" as specified by the
 * STEM parameter.
 * The following code shows one way to use YKQRYDEV with SN, CU, and
 * CCA parameters, such as follows:
 *    "SN(12345) CU(10) CCA(20)"
 */
address TSO "YKQRYDEV STEM(DEMO_CDEVS.) SN(#####) CU(##) CCA(##)",
            "MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Print the information in the command device in the secondary
 * storage system.
 */
say "-------------------------------------";
say "CDEV(Secondary) DKC's SSID = " || DEMO_CDEVS.SSID;
say "CDEV(Secondary) is valid?  = " || DEMO_CDEVS.Cdev.Info;
say "CDEV(Secondary) is status  = " || DEMO_CDEVS.Cdev.Status;
say "CDEV(Secondary)'s APID     = " || DEMO_CDEVS.Cdev.APID;
say "-------------------------------------";


/*
 * Delete the command device in the secondary storage system.
 * Note that the secondary command device is deleted first. This is
 * because YKDELCMD command should be sent to the secondary site. If
 * the primary command device was deleted first, there is no way for
 * BC Manager to send the command to the secondary command device.
 * The following code shows one way to use YKDELCMD with SN, CU, CCA
 * and APID parameters, such as follows:
 *    "SN(12345) CU(10) CCA(20) APID(5613)"
 * Please note that if the route list is available, you do not actually
 * have to specify CU, CCA and APID parameters.
 */
address TSO "YKDELCMD SN(#####) MSG(DEMO_MSG.) CU(##) CCA(##)",
            "APID(####)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Now delete the command device in the primary storage system. As
 * in the previous YKDELCMD call, supply the appropriate values to
 * SN, CU, CCA and APID parameters for the command device in the
```

```
 * primary storage system.
 * Please note that if the route list is available, you do not actually
 * have to specify CU, CCA and APID parameters.
 */
address TSO "YKDELCMD SN(#####) MSG(DEMO_MSG.) CU(##) CCA(##)",
            "APID(####)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Delete the logical paths to clean up the configuration.
 * If a logical path is defined and built as a "shared" path, the FORCE
 * option must be specified to delete such path. When using this
 * option, make sure that no one else is using the same path because
 * deleting such a shared path will affect other users or applications
 * who are using the same path.
 */
address TSO "YKDELPTH STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


say "#-- END YKDEMO03."; /* The sample script completed.              */
exit;


/*
 * printErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
printErrorMessage: procedure expose DEMO_MSG.
    do x = 1 to DEMO_MSG.0
        say "Severity = " || DEMO_MSG.x.Severity;
        say "Text     = " || DEMO_MSG.x.Text;
        say "Value    = " || DEMO_MSG.x.Value;
    end;
    return 0;
```

YKDEMO04

```
/* REXX                                                              */
/*******************************************************************/
/*                                                                   */
/* All Rights Reserved. Copyright (C) 2007, 2020, Hitachi, Ltd.      */
/*                                                                   */
/*******************************************************************/
```

```
/*                                                                    */
/* YKDEMO04 - A sample demonstration script that illustrates how to   */
/*    use the Business Continuity Manager's REXX CLI commands for     */
/*    using Extended C/T Group feature of TrueCopy Synchronous.       */
/*    This script will continue monitoring for IEA494I message for    */
/*    a suspended copy pair in the given TC-Sync copy group for 120   */
/*    seconds.                                                        */
/*                                                                    */
/*    This sample script uses the following CLI commands.             */
/*       - YKLOAD                                                     */
/*       - YKEWAIT                                                    */
/*       - YKCONMSG                                                   */
/*       - YKFREEZE                                                   */
/*       - YKSUSPND                                                   */
/*       - YKRUN                                                      */
/*                                                                    */
/*    This sample script assumes the following settings.              */
/*                                                                    */
/*    1) The definition files are stored in the dataset with the      */
/*       prefix "BCM.DEMO".                                           */
/*    2) TC-Sync copy group is used. The copy group ID is "MYTCS".    */
/*    3) The route list ID is "DEMORLST".                             */
/*    4) The primary Device Address Domain ID is "PRIM".              */
/*                                                                    */
/**********************************************************************/
/* Sample script begins. */
/**********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,         */
/*       please uncomment the instructions lines below.               */
/**********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

say "#-- BEGIN YKDEMO04.";
address TSO "YKENV"

/*
 * YKLOAD should be called before manipulating MYTCS to make definition
 * information of MYTCS available on the REXX environment.
 * If you want to issue all commands via command devices,
 * please uncomment the VIACDEV parameter.
 */
call "YKLOAD" "STEM(DEMO_INFO.) PREFIX(BCM.DEMO) GROUP(MYTCS)",
              "DAD(PRIM) MSG(DEMO_MSG.)",
              "ROUTE(DEMORLST)" /* "VIACDEV" */ ;

/*
 * Check the return code of YKLOAD to see if it is 0 or not.
 */
if result /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * As in YKDEMO01, YKEWAIT can be used to update the copy group
 * status information quickly.
 */
```

```
address TSO "YKEWAIT STEM(DEMO_INFO.) MSG(DEMO_MSG.) GOTO(SIMPLEX)",
            "TIMEOUT(0) NOINVALIDCHECK";

/*
 * Check the return code to see if it is bigger than 8.
 */
if rc > 8
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Use YKCONMSG with OP(OPEN) parameter to establish the EMCS console
 * interface for monitoring IEA494I message. Use OUTTRAP instruction
 * of REXX to acquire the handler value that needs to be referenced
 * in the subsequent YKCONMSG calls. The return code for successful
 * completion of YKCONMSG with OP(OPEN) is 0.
 */
temp = OUTTRAP("MyHandle.");
address TSO "YKCONMSG OP(OPEN)";
temp = OUTTRAP("OFF");

if rc /= 0
then do
    say "YKCONMSG OP(OPEN) failed.";
    exit;
end;
else
    nop;

/*
 * Get the handler value that was obtained via YKCONMSG OP(OPEN).
 */
parse var MyHandle.1 "HANDLE(x'"HandlerValue"')";


/*
 * Start counting the elapsed time for 120 seconds.
 */
elapsedTime = time('e');


/*
 * This 'forever' loop keeps invoking YKCONMSG with OP(GET)
 * parameter and the handler value that was obtained in the last
 * YKCONMSG call to capture the IEA494I message at the EMCS console
 * interface.
 * The script will exit the loop if either 120 seconds elapsed or
 * IEA494I message was successfully captured for a copy pair of
 * the given TC-Sync copy group.
 */
do forever

    /*
     * Invoke YKCONMSG again, but this time with OP(GET) parameter
     * and the hander value so that IEA494I message can be
     * captured.
     */
    dc = OUTTRAP("MyHandle.");
    address TSO "YKCONMSG OP(GET) HANDLE(x'"HandlerValue"')";
    dc = OUTTRAP("OFF");


    /*
     * Check the return code of YKCONMSG to see if it is 1 or not.
```

```
 * YKCONMSG with OP(GET) parameter returns the return code 1
 * if it could capture the IEA494I message successfully.
 */
if rc = 1
then do

    /*
     * Extract the message body from the captured IEA494I string.
     */
    parse var MyHandle.1 . IEA494Imsg;

    /*
     * Check to see if the captured IEA494I message is
     * generated due to the relevant copy pair in the TC-Sync
     * copy group becoming suspended.
     * Modify the value of 'myDevn' below to the device number
     * of a volume of a relevant copy pair to run this script.
     */
    myDevn = "####";
    Parse var IEA494Imsg msgnum mdev ',';
    devnFound = pos(myDevn, mdev);
    suspFound = pos("PAIR SUSPENDED", IEA494Imsg);

    /*
     * If the relevant copy pair became suspended, then
     * suspend the TC-Sync copy group.
     */
    if devnFound /= 0 & suspFound /= 0
    then do

        say "#-- IEA494I message was captured for "myDevn".";

        /*
         * The following lines do not check the return code of
         * each command call except for YKEWAIT for the sake of
         * minimizing the time to block the host I/O by
         * YKFREEZE.
         * You may check the return code of each command for
         * more thorough error checking.
         */
        /*
         * Block the host I/O for 5 seconds. Use YKRUN to resume
         * I/O earlier.
         */
        address TSO "YKFREEZE STEM(DEMO_INFO.) MSG(DEMO_MSG.)",
                    "TIMEOUT(5000)";

        /*
         * Suspend the TC-Sync copy group.
         */
        address TSO "YKSUSPND STEM(DEMO_INFO.) MSG(DEMO_MSG.)",
                    "FORWARD SELECT(COND)";

        /*
         * Resume the host I/O.
         */
        address TSO "YKRUN STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

        /*
         * Wait for the TC-Sync copy group to become fully
         * suspended.
         */
        address TSO "YKEWAIT STEM(DEMO_INFO.) MSG(DEMO_MSG.)",
                    "GOTO(SUSPEND) TIMEOUT(30)";

        /* Check if the TC-Sync copy group is suspended.          */
        if rc /= 0
        then do
            call printErrorMessage;
```

```
                /*
                 * Close the EMCS console interface that was opened by
                 * the previous YKCONMSG OP(OPEN) call. Note that the
                 * return code for YKCONMSG with OP(CLOSE) parameter is
                 * 6 if it completed successfully.
                 */
                address TSO "YKCONMSG OP(CLOSE)",
                            "HANDLE(x'"HandlerValue"')";

                /*
                 * Check the return code to see if it is 6 or not.
                 * Note that the return code for YKCONMSG with
                 * OP(CLOSE) is 6 for successful completion.
                 */
                if rc /= 6
                then
                    say "YKCONMSG OP(CLOSE) failed.";
                else
                    nop;

                exit;
            end;
            else
                nop;

            leave; /* Exit the loop. */
        end;
    end;

    /* Check if 120 seconds have elapsed after starting the loop.     */
    elapsedTime = time('e');
    if elapsedTime > 120
    then do
        say "#-- 120 seconds have elapsed. Stop monitoring IEA494I.";
        leave;
    end;
    else
        nop;
end; /* do forever */


/*
 * Close the EMCS console interface that was opened by the previous
 * YKCONMSG OP(OPEN) call. Note that the return code for YKCONMSG with
 * OP(CLOSE) parameter is 6 if it completed successfully.
 */
address TSO "YKCONMSG OP(CLOSE) HANDLE(x'"HandlerValue"')";

/*
 * Check the return code to see if it is 6 or not. Note that the return
 * code for YKCONMSG with OP(CLOSE) is 6 for successful completion.
 */
if rc /= 6
then do
    say "YKCONMSG OP(CLOSE) failed.";
    exit;
end;
else
    nop;

say "#-- END YKDEMO04.";
exit;


/*
 * printErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
```

```
printErrorMessage: procedure expose DEMO_MSG.
    do x = 1 to DEMO_MSG.0
        say "Severity = " || DEMO_MSG.x.Severity;
        say "Text     = " || DEMO_MSG.x.Text;
        say "Value    = " || DEMO_MSG.x.Value;
    end;
    return 0;
```

YKDEMO05

```
/* REXX                                                                 */
/************************************************************************/
/*                                                                      */
/* All Rights Reserved. Copyright (C) 2007, 2017, Hitachi, Ltd.         */
/*                                                                      */
/************************************************************************/
/*                                                                      */
/* YKDEMO05 - A sample demonstration script that illustrates how to     */
/*    use the Business Continuity Manager's REXX CLI commands for       */
/*    obtaining various copy group information.                         */
/*                                                                      */
/*    This sample script uses the following CLI commands.               */
/*       - YKLOAD                                                       */
/*       - YKQUERY                                                      */
/*       - YKSTATS                                                      */
/*                                                                      */
/*    This sample script assumes the following settings.                */
/*                                                                      */
/*    1) The definition files are stored in the dataset with the        */
/*       prefix "BCM.DEMO".                                             */
/*    2) TC-Async copy group is used. The copy group ID is "MYUR1".     */
/*    3) The route list ID is "DEMORLST".                               */
/*    4) The primary Device Address Domain ID is "PRIM".                */
/*                                                                      */
/************************************************************************/
/* Sample script begins. */
/************************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,           */
/*       please uncomment the instructions lines below.                 */
/************************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

say "#-- BEGIN YKDEMO05.";
address TSO "YKENV"

/*
 * YKLOAD should be called before manipulating MYUR1 to make definition
 * information of MYUR1 available on the REXX environment.
 * If you want to issue all commands via command devices,
 * please uncomment the VIACDEV parameter.
 */
call "YKLOAD" "STEM(DEMO_INFO.) PREFIX(BCM.DEMO) GROUP(MYUR1)",
              "DAD(PRIM) MSG(DEMO_MSG.)",
              "ROUTE(DEMORLST)" /* "VIACDEV" */ ;

/*
 * Check the return code of YKLOAD to see if it is 0 or not.
```

```
 */
if result /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Call YKQUERY to refresh the information in the Copy Group structure
 * of MYUR1 copy group before calling YKMAKE. You may use YKEWAIT with
 * TIMEOUT(0) parameter instead, as demonstrated in YKDEMO01.
 */
address TSO "YKQUERY STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is bigger than 8.
 */
if rc > 8
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Establish all copy pairs in MYUR1 copy group into DUPLEX. This is
 * for demonstration purpose only. In reality you may already have a
 * copy group up and running.
 */
address TSO "YKMAKE STEM(DEMO_INFO.) MSG(DEMO_MSG.) SELECT(COND)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Call YKQUERY to fully update the information in the Copy Group
 * structure of MYUR1 copy group.
 * YKEWAIT with TIMEOUT(0) as demonstrated in YKDEMO01 should not be
 * used because it only partially updates the information.
 */
address TSO "YKQUERY STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is bigger than 8.
 */
if rc > 8
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Call YKSTATS to obtain performance information of MYUR1.
 * Note that the Usage Monitor must be running for YKSTATS to obtain
```

```
 * performance information.
 */
address TSO "YKSTATS STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Few of the information items that you can acquire by YKQUERY and
 * YKSTATS are shown here. Refer to the Business Continuity Manager
 * Reference Guide for the list of all information items that you can
 * obtain via YKQUERY and YKSTATS.
 * For C/T Delta value, this sample script shows the value from just
 * one copy pair. You may view the value for as many pairs as present.
 */
do x = 1 to DEMO_INFO.CopyGroup.0
    say "Copy Group Name     : " ||,
        DEMO_INFO.CopyGroup.x.ID;
    say "Copy Type           : " ||,
        DEMO_INFO.CopyGroup.x.CopyType;
    say "Matching Percent    : " ||,
        DEMO_INFO.CopyGroup.x.MatchingPerCent;
    say "C/T Delta of a pair : " ||,
        DEMO_INFO.CopyGroup.x.Pair.1.CTDelta;

    /* Some information items such as shown below are specific to     */
    /* either TC-Async or UR. The following piece of code displays    */
    /* some of the information items for each of TC-Async and UR.     */
    do y = 1 to DEMO_INFO.CopyGroup.x.Stats.0
        select
            when DEMO_INFO.CopyGroup.x.CopyType == "UR"
            then do
                say "Primary Journal Metadata  : " ||,
                    DEMO_INFO.CopyGroup.x.Stats.y.Pri_Jnl_Meta;
                say "Secondary Journal Metadata : " ||,
                    DEMO_INFO.CopyGroup.x.Stats.y.Sec_Jnl_Meta;
            end;
            otherwise
                nop;
        end;
    end;
end;

say "#-- END YKDEMO05.";
exit;


/*
 * printErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
printErrorMessage: procedure expose DEMO_MSG.
    do x = 1 to DEMO_MSG.0
        say "Severity = " || DEMO_MSG.x.Severity;
        say "Text     = " || DEMO_MSG.x.Text;
        say "Value    = " || DEMO_MSG.x.Value;
    end;
    return 0;
```

YKDEMO06

```
/* REXX                                                               */
/**********************************************************************/
/*                                                                    */
/* All Rights Reserved. Copyright (C) 2007, 2017, Hitachi, Ltd.       */
/*                                                                    */
/**********************************************************************/
/*                                                                    */
/* YKDEMO06 - A sample demonstration script that illustrates how to   */
/*    use the Business Continuity Manager's YKWATCH command.          */
/*                                                                    */
/*    This sample script assumes the following settings.              */
/*                                                                    */
/*    1) The definition files are stored in the dataset with the      */
/*       prefix "BCM.DEMO".                                           */
/*    2) TC-Sync copy group is used. The copy group ID is "MYTCS".    */
/*    3) The route list ID is "DEMORLST".                             */
/*    4) The primary Device Address Domain ID is "PRIM".              */
/*                                                                    */
/**********************************************************************/
/* Sample script begins. */
/**********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,         */
/*       please uncomment the instructions lines below.               */
/**********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

say "#-- BEGIN YKDEMO06.";
address TSO "YKENV"

/*
 * YKLOAD should be called before manipulating MYTCS to make definition
 * information of MYTCS available on the REXX environment.
 * If you want to issue all commands via command devices,
 * please uncomment the VIACDEV parameter.
 */
call "YKLOAD" "STEM(DEMO_INFO.) PREFIX(BCM.DEMO) GROUP(MYTCS)",
              "DAD(PRIM) MSG(DEMO_MSG.)",
              "ROUTE(DEMORLST)" /* "VIACDEV" */ ;

/*
 * Check the return code of YKLOAD to see if it is 0 or not.
 */
if result /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Update the Copy Group structure for MYTCS before YKMAKE. You may
 * also use YKEWAIT with TIMEOUT(0) for faster update.
 */
address TSO "YKQUERY STEM(DEMO_INFO.) MSG(DEMO_MSG.)";
```

```
/*
 * Check the return code to see if it is bigger than 8.
 */
if rc > 8
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Establish all copy pairs in MYTCS copy group into DUPLEX. This is
 * for demonstration purpose only. In reality you may already have a
 * copy group up and running so that you do not have to use YKMAKE
 * before YKWATCH.
 */
address TSO "YKMAKE STEM(DEMO_INFO.) MSG(DEMO_MSG.) SELECT(COND)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Use YKWATCH to let BC Manager notify the state transition of MYTCS
 * when it became DUPLEX. You may use YKWATCH for other copy group
 * statuses, too.
 * In this example, YKWATCH monitors MYTCS copy group to become
 * DUPLEX for 30 minutes, and notifies a user about such status
 * transition by sending a notification message to the current user's
 * console.
 */
call "YKWATCH" "PREFIX(BCM.DEMO) GROUP(MYTCS) GOTO(DUPLEX)",
               "TIMEOUT(30) DAD(PRIM)";
/*
 * Check the return code to see if it is 0 or not.
 */
if result /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


say "#-- END YKDEMO06.";
exit;


/*
 * printErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
printErrorMessage: procedure expose DEMO_MSG.
    do x = 1 to DEMO_MSG.0
        say "Severity = " || DEMO_MSG.x.Severity;
        say "Text     = " || DEMO_MSG.x.Text;
        say "Value    = " || DEMO_MSG.x.Value;
```

```
    end;
    return 0;
```

YKDEMO07

```
/* REXX                                                              */
/*********************************************************************/
/*                                                                   */
/* All Rights Reserved. Copyright (C) 2007, 2017, Hitachi, Ltd.      */
/*                                                                   */
/*********************************************************************/
/*                                                                   */
/* YKDEMO07 - A sample demonstration script that illustrates how to  */
/*    use the Business Continuity Manager's YKRECVER command.        */
/*                                                                   */
/*    This sample script assumes the following settings.             */
/*                                                                   */
/*    1) The definition files are stored in the dataset with the     */
/*       prefix "BCM.DEMO".                                          */
/*    2) TC-Sync copy group is used. The copy group ID is "MYTCS".   */
/*    3) The route list ID is "DEMORLST".                            */
/*    4) The primary Device Address Domain ID is "PRIM".             */
/*                                                                   */
/*********************************************************************/
/* Sample script begins. */
/*********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,        */
/*       please uncomment the instructions lines below.              */
/*********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

say "#-- BEGIN YKDEMO07.";
address TSO "YKENV"

/*
 * YKLOAD should be called before manipulating MYTCS to make definition
 * information of MYTCS available on the REXX environment.
 * If you want to issue all commands via command devices,
 * please uncomment the VIACDEV parameter.
 */
call "YKLOAD" "STEM(DEMO_INFO.) PREFIX(BCM.DEMO) GROUP(MYTCS)",
              "DAD(PRIM) MSG(DEMO_MSG.)",
              "ROUTE(DEMORLST)" /* "VIACDEV" */ ;

/*
 * Check the return code of YKLOAD to see if it is 0 or not.
 */
if result /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
```

```
 * Update the Copy Group structure for MYTCS before YKMAKE. You may
 * also use YKEWAIT with TIMEOUT(0) for faster update.
 */
address TSO "YKQUERY STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is bigger than 8.
 */
if rc > 8
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Establish all copy pairs in MYTCS copy group into DUPLEX. This is
 * for demonstration purpose only. In reality you may already have a
 * copy group up and running.
 */
address TSO "YKMAKE STEM(DEMO_INFO.) MSG(DEMO_MSG.) SELECT(COND)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Wait for MYTCS to become fully established.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.) MSG(DEMO_MSG.) GOTO(DUPLEX)",
            "TIMEOUT(30)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * The line below shows how to execute YKRECVER.
 * The situation in which you have to use this command is rare, but
 * this command is useful when the primary site failed and a copy
 * group between the primary and the secondary sites cannot be
 * dissolved from the primary site. In such a case, YKRECVER should
 * be used to forcibly dissolve a copy group from the secondary site.
 */
address TSO "YKRECVER STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
```

```
    exit;
end;
else
    nop;


say "#-- END YKDEMO07.";
exit;


/*
 * printErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
printErrorMessage: procedure expose DEMO_MSG.
    do x = 1 to DEMO_MSG.0
        say "Severity = " || DEMO_MSG.x.Severity;
        say "Text     = " || DEMO_MSG.x.Text;
        say "Value    = " || DEMO_MSG.x.Value;
    end;
    return 0;
```

YKDEMO08

```
/* REXX                                                              */
/*******************************************************************/
/*                                                                   */
/* All Rights Reserved. Copyright (C) 2009, 2017, Hitachi, Ltd.      */
/*                                                                   */
/*******************************************************************/
/*                                                                   */
/* YKDEMO08 - A sample demonstration script that illustrates         */
/*    how to use the Business Continuity Manager's CLI commands to   */
/*    perform fail-over operations in a 2DC configuration with       */
/*    HyperSwap and UR.                                              */
/*     This script can be used when storage system at the primary    */
/*    site has been stopped for a storage system maintenance or      */
/*    because a storage system failure has occurred.                 */
/*                                                                   */
/*    This sample script assumes the following settings:             */
/*                                                                   */
/*    1) The definition files are stored in the dataset with the     */
/*       prefix "BCM.DEMO".                                          */
/*    2) The TC copy group's copy group ID is MYTCHS.                */
/*    3) The copy group ID between the primary and                   */
/*       remote sites is MYUR1.                                      */
/*    4) The copy group ID between the local and                     */
/*       remote sites is MYUR2.                                      */
/*    5) The route list ID is "DEMORLST".                            */
/*    6) The primary Device Address Domain ID is "PRIM".             */
/*                                                                   */
/*    The details for this sample script are as follows:             */
/*                                                                   */
/*    1) Call YKLOAD to load configuration definitions.              */
/*    2) Confirm the ready state for operations in 2DC configuration */
/*       with HyperSwap and UR.                                      */
/*    3) Watch for the occurrence of a HyperSwap.                    */
/*    4) Suspend MYUR1.                                              */
/*    5) Execute DeltaResync MYUR2.                                  */
/*                                                                   */
/*******************************************************************/
/* Sample script begins. */
/*******************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,        */
/*       please uncomment the instructions lines below.              */
```

```
/*********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

say "#-- BEGIN YKDEMO08."
address TSO "YKENV"

/*
 * If you want to issue all commands via command devices,
 * please uncomment the VIACDEV parameter.
 */
call "YKLOAD" "STEM(DEMO_INFO.MYTCHS.) PREFIX(BCM.DEMO) GROUP(MYTCHS)",
              "DAD(PRIM) MSG(DEMO_MSG.)",
              "ROUTE(DEMORLST)" /* "VIACDEV" */ ;

/*
 * Check the return code of YKLOAD.
 */
if result /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


call "YKLOAD" "STEM(DEMO_INFO.MYUR1.) PREFIX(BCM.DEMO) GROUP(MYUR1)",
              "DAD(PRIM) MSG(DEMO_MSG.)"

/*
 * Check the return code of YKLOAD.
 */
if result /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


call "YKLOAD" "STEM(DEMO_INFO.MYUR2.) PREFIX(BCM.DEMO) GROUP(MYUR2)",
              "DAD(PRIM) MSG(DEMO_MSG.)"

/*
 * Check the return code of YKLOAD.
 */
if result /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


/*
 * Check the status of MYTCHS to confirm the ready status for operations
 * in 2DC configuration with HyperSwap and UR.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.MYTCHS.) MSG(DEMO_MSG.)",
```

```
            "GOTO(DUPLEX) TIMEOUT(0) NOINVALIDCHECK"

/*
 * Check the return code of YKEWAIT.
 */
if rc /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


/*
 * Check the status of MYUR1 to confirm the ready status for operations
 * in 2DC configuration with HyperSwap and UR.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.MYUR1.) MSG(DEMO_MSG.)",
            "GOTO(DUPLEX) TIMEOUT(0) NOINVALIDCHECK"

/*
 * Check the return code of YKEWAIT.
 */
if rc /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


/*
 * Check the status of MYUR2 to confirm the ready status for operations
 * in 2DC configuration with HyperSwap and UR.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.MYUR2.) MSG(DEMO_MSG.)",
            "GOTO(HOLD) TIMEOUT(0) NOINVALIDCHECK"

/*
 * Check the return code of YKEWAIT.
 */
if rc /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


/*
 * Use YKCONMSG with the OP(OPEN) and MSGID(IOSHM0414I) parameters
 * to establish the EMCS console interface to monitor the IOSHM0414I
 * message. Use the REXX instruction OUTTRAP to acquire the handler
 * value that needs to be referenced in subsequent YKCONMSG calls.
 * The return code for the successful completion of YKCONMSG with the
 * OP(OPEN) parameter is 0.
 */
temp = OUTTRAP("MyHandle.")
address TSO "YKCONMSG OP(OPEN) MSGID(IOSHM0414I)"
temp = OUTTRAP("OFF")

if rc /= 0
then do
    say "YKCONMSG OP(OPEN) failed."
    exit
end
```

```
else
    nop

/*
 * Get the handler value that was obtained via YKCONMSG OP(OPEN).
 */
parse var MyHandle.1 "HANDLE(x'"HandlerValue"')"


/*
 * Start the monitoring period of 120 seconds.
 */
elapsedTime = time('e')


/*
 * This 'forever' loop will continue to invoke YKCONMSG with OP(GET)
 * parameter and the handler value that was obtained in the last
 * YKCONMSG call to capture the IOSHM0414I message at the EMCS console
 * interface. The script will exit the loop after either 120 seconds has
 * elapsed or the IOSHM0414I message is successfully captured.
 * IOSHM0414I message is successfully obtained.
 */
do forever

    /*
     * Invoke YKCONMSG again, but this time with the OP(GET) parameter
     * and the hander value so that the IOSHM0414I message can be
     * captured.
     */
    dc = OUTTRAP("MyHandle.")
    address TSO "YKCONMSG",
                "OP(GET) HANDLE(x'"HandlerValue"')"
    dc = OUTTRAP("OFF")


    /*
     * Check the return code of YKCONMSG to see if it is 1 or not.
     * YKCONMSG with the OP(GET) parameter returns the return code 1
     * if it was able to capture the IOSHM0414I message.
     */
    if rc = 1
    then do

        /*
         * Extract the message body from the captured IOSHM0414I string.
         */
        parse var MyHandle.1 . IOSHM0414Imsg

        /*
         * Check to see if the captured IOSHM0414I message is
         * generated due to the relevant copy pair in the MYTCHS
         * copy group performing a planned or unplanned HyperSwap.
         */
        PlannedFound = pos("Planned", IOSHM0414Imsg)
        UnplannedFound = pos("Unplanned", IOSHM0414Imsg)

        /*
         * If a HyperSwap has occurred in the relevant copy pair,
         * then resync MYUR2.
         */
        if PlannedFound /= 0 | UnplannedFound /= 0
        then do

            say "#-- IOSHM0414I message was captured."

            if UnplannedFound /= 0
            then do
                /*
```

```
         * Check the status of the secondary volume that belong
         * to the MYTCHS copy pair to see if a DeltaResync
         * can be performed.
         */
        address TSO "YKEWAIT STEM(DEMO_INFO.MYTCHS.)",
                    " MSG(DEMO_MSG.) GOTO(SWAPPING)",
                    " TO(SECONDARY) TIMEOUT(0)"

        /*
         * Check the return code of YKEWAIT.
         */
        if rc /= 0
        then do
            call printErrorMessage
            leave /* Exit the loop. */
        end
        else
            nop

        /*
         * Suspend the MYUR1 copy pair to change the status of
         * MYUR1 into one where a DeltaResync can be performed.
         */
        address TSO "YKSUSPND STEM(DEMO_INFO.MYUR1.)",
                    " MSG(DEMO_MSG.) FLUSH"

        /*
         * Confirm that the status of MYUR1 copy pair is in a
         * status where a DeltaResync can be performed.
         */
        address TSO "YKEWAIT STEM(DEMO_INFO.MYUR1.)",
                    "MSG(DEMO_MSG.) GOTO(SUSPEND) TIMEOUT(10)"

    end
    else do
        /*
         * Confirm that the MYTCHS copy pair is in a status
         * where a DeltaResync can be performed.
         */
        address TSO "YKEWAIT STEM(DEMO_INFO.MYTCHS.)",
                    " MSG(DEMO_MSG.) GOTO(SWAPPING)",
                    " TIMEOUT(0)"

        /*
         * Check the return code of YKEWAIT.
         */
        if rc /= 0
        then do
            call printErrorMessage
            leave /* Exit the loop. */
        end
        else
            nop

        /*
         * Suspend the MYUR1 copy pair to change the status of
         * MYUR1 into one where a DeltaResync can be performed.
         */
        address TSO "YKSUSPND STEM(DEMO_INFO.MYUR1.)",
                    " MSG(DEMO_MSG.) FLUSH"

        /*
         * Check the return code of YKSUSPND.
         */
        if rc /= 0
        then do
            call printErrorMessage
            leave /* Exit the loop. */
        end
```

```
            else
                nop

            /*
             * Confirm that the MYUR1 copy pair is in a status
             * where a DeltaResync can be performed.
             */
            address TSO "YKEWAIT STEM(DEMO_INFO.MYUR1.) ",
                        "MSG(DEMO_MSG.) GOTO(SUSPEND) TIMEOUT(10)"

            /*
             * Check the return code of YKEWAIT.
             */
            if rc /= 0
            then do
                call printErrorMessage
                leave /* Exit the loop. */
            end
            else
                nop

        end

        /*
         * Execute a DeltaResync with the MYUR2 copy pair to
         * change the status of MYUR1 to HOLD, and
         * to change the status of MYUR2 to DUPLEX.
         */
        address TSO "YKRESYNC STEM(DEMO_INFO.MYUR2.) ",
                    "MSG(DEMO_MSG.) DELTAJNL"

        /*
         * Check the return code of YKRESYNC.
         */
         if rc /= 0
         then do
             call printErrorMessage
             leave /* Exit the loop. */
         end
         else
             nop

        /*
         * Wait for completion of copying from the local site to
         * the remote site.
         */
        address TSO "YKEWAIT STEM(DEMO_INFO.MYUR2.) MSG(DEMO_MSG.)",
                    "GOTO(DUPLEX) TIMEOUT(30)"

        /*
         * Check the return code of YKEWAIT.
         */
        if rc /= 0
        then do
            call printErrorMessage
            leave /* Exit the loop. */
        end
        else
            nop

        leave /* Exit the loop. */
    end
end

/* Check if 120 seconds have elapsed after starting the loop.     */
elapsedTime = time('e')
if elapsedTime > 120
then do
    say "#-- 120 seconds have elapsed. Stop monitoring IOSHM0414I."
```

```
        leave
    end
    else
        nop
end /* do forever */


/*
 * Close the EMCS console interface that was opened by the previous
 * YKCONMSG OP(OPEN) call. Note that the return code for YKCONMSG with
 * the OP(CLOSE) parameter is 6 if it completed successfully.
 */
address TSO "YKCONMSG OP(CLOSE) HANDLE(x'"HandlerValue"')"

/*
 * Check the return code to see if it is 6 or not. Note that the return
 * code for YKCONMSG with the OP(CLOSE) parameter is 6 for
 * successful completion.
 */
if rc /= 6
then do
    say "YKCONMSG OP(CLOSE) failed."
    exit
end
else
    nop

say "#-- END YKDEMO08."
exit


/*
 * printErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
printErrorMessage: procedure expose DEMO_MSG.
    do x = 1 to DEMO_MSG.0
        say "Severity = " || DEMO_MSG.x.Severity
        say "Text     = " || DEMO_MSG.x.Text
        say "Value    = " || DEMO_MSG.x.Value
    end
    return 0
```

YKDEMO09

```
/* REXX                                                              */
/*******************************************************************/
/*                                                                   */
/* All Rights Reserved. Copyright (C) 2009, 2017, Hitachi, Ltd.      */
/*                                                                   */
/*******************************************************************/
/*                                                                   */
/* YKDEMO09 - A sample demonstration script that illustrates         */
/*    how to use the Business Continuity Manager's CLI commands to   */
/*    perform fail-back operations in a 2DC configuration with       */
/*    HyperSwap and UR.                                              */
/*     This script can be used when storage system at the primary    */
/*    site has been stopped for a storage system maintenance or      */
/*    because a storage system failure has occurred.                 */
/*                                                                   */
/*    This sample script assumes the following settings:             */
/*                                                                   */
/*    1) The definition files are stored in the dataset with the     */
/*       prefix "BCM.DEMO".                                          */
/*    2) The TC copy group's copy group ID is MYTCHS.                */
```

```
/*    3) The copy group ID between the primary and                    */
/*       remote sites is MYUR1.                                       */
/*    4) The copy group ID between the local and                      */
/*       remote sites is MYUR2.                                       */
/*    5) The route list ID is "DEMORLST".                             */
/*    6) The primary Device Address Domain ID is "PRIM".              */
/*                                                                    */
/*    The details for this sample script are as follows:              */
/*                                                                    */
/*    *) When the cause of a HyperSwap is a storage system failure,   */
/*       execute this sample script twice.                            */
/*       When execution for a storage system maintenance or second    */
/*       execution for a storage system failure, before using this    */
/*       sample script, change the status of the MYTCHS copy pair to  */
/*       Swapping that direction is the primary site to the secondary */
/*       site.                                                        */
/*    1) Call YKLOAD to load a configuration definitions.             */
/*    2) Check whether the cause of a HyperSwap was a storage system  */
/*       maintenance or a failure.                                    */
/*    *) When first execution for a storage system failure, go to     */
/*       steps 3 and 4.                                               */
/*       When execution for a storage system maintenance or second    */
/*       execution for a storage system failure, go to steps 5 and 6. */
/*    3) Delete the MYUR1 copy pair.                                  */
/*    4) Make the MYUR1 copy pair, exit this sample script, and then  */
/*       re-execute this sample script again.                         */
/*    5) Suspend the MYUR2 copy pair.                                 */
/*    6) Execute a DeltaResync on the MYUR1 copy pair.                */
/*    *) After using this sample script, resync MYTCHS.               */
/*                                                                    */
/**********************************************************************/
/* Sample script begins. */
/**********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,         */
/*       please uncomment the instructions lines below.               */
/**********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

say "#-- BEGIN YKDEMO09."
address TSO "YKENV"

/*
 * If you want to issue all commands via command devices,
 * please uncomment the VIACDEV parameter.
 */
call "YKLOAD" "STEM(DEMO_INFO.MYTCHS.) PREFIX(BCM.DEMO) GROUP(MYTCHS)",
              "DAD(PRIM) MSG(DEMO_MSG.)",
              "ROUTE(DEMORLST)" /* "VIACDEV" */ ;

/*
 * Check the return code of YKLOAD.
 */
if result /= 0
then do
    call printErrorMessage
    exit
end
else
    nop
```

```
call "YKLOAD" "STEM(DEMO_INFO.MYUR1.) PREFIX(BCM.DEMO) GROUP(MYUR1)",
              "DAD(PRIM) MSG(DEMO_MSG.)"

/*
 * Check the return code of YKLOAD.
 */
if result /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


call "YKLOAD" "STEM(DEMO_INFO.MYUR2.) PREFIX(BCM.DEMO) GROUP(MYUR2)",
              "DAD(PRIM) MSG(DEMO_MSG.)"

/*
 * Check the return code of YKLOAD.
 */
if result /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


/*
 * Check the status of the MYUR1 copy pair
 * to find the cause of a HyperSwap.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.MYUR1.) MSG(DEMO_MSG.)",
            "GOTO(HOLD) TIMEOUT(0) NOINVALIDCHECK"

/*
 * Check the return code of YKEWAIT.
 */
if (rc < 0)|(rc > 8)
then do
    call printErrorMessage
    exit
end
else
do
    if rc /= 0
    then do
        say "recover to ready state for DeltaResync",
            "from failure configuration."


        /*
         * Delete the MYUR1 copy pair when a failure occurs.
         */
        address TSO "YKDELETE STEM(DEMO_INFO.MYUR1.) MSG(DEMO_MSG.)"

        /*
         * Check the return code of YKDELETE.
         */
        if rc /= 0
        then do
            call printErrorMessage
        end
        else
            nop
```

```
/*
 * Confirm that the status of the MYUR1 copy pair is one where
 * the copy pair can be copied.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.MYUR1.) MSG(DEMO_MSG.)",
            "GOTO(SIMPLEX) TIMEOUT(10)"

/*
 * Check the return code of YKEWAIT.
 */
if rc /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


say "#-- MYTCHS copy pair change to DUPLEX state in TPC-R."


/*
 * Confirm that the status of the MYTCHS copy pair
 * has been recovered.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.MYTCHS.) MSG(DEMO_MSG.)",
        "GOTO(DUPLEX) TIMEOUT(30)"

/*
 * Check the return code of YKEWAIT.
 */
if rc /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


/*
 * Execute Make(HOLD) on the MYUR1 to change
 * the status of MYUR1 to one where a DeltaResync
 * can be performed.
 */
address TSO "YKMAKE STEM(DEMO_INFO.MYUR1.) MSG(DEMO_MSG.) HOLD"

/*
 * Check the return code of YKMAKE.
 */
if rc /= 0
then do
    call printErrorMessage
end
else
    nop


/*
 * Confirm that the status of the MYUR1 copy pair is one where a
 * DeltaResync can be performed.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.MYUR1.) MSG(DEMO_MSG.)",
            "GOTO(HOLD) TIMEOUT(10)"

/*
 * Check the return code of YKEWAIT.
 */
```

```
        if rc /= 0
        then do
            call printErrorMessage
            exit
        end
        else
            nop


        exit


    end
    else
    do
        say "recover to ready state for DeltaResync",
            "from planned outage configuration."
    end
end


/*
 * Confirm that the status of the MYTCHS copy pair is one where a
 * DeltaResync can be performed.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.MYTCHS.) MSG(DEMO_MSG.)",
            "GOTO(SWAPPING) TIMEOUT(10)"

/*
 * Check the return code of YKEWAIT.
 */
if rc /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


/*
 * Suspend the MYUR2 copy pair to change the status of MYUR2
 * to one where a DeltaResync can be performed.
 */
address TSO "YKSUSPND STEM(DEMO_INFO.MYUR2.)",
            "MSG(DEMO_MSG.) FLUSH"

/*
 * Check the return code of YKSUSPND.
 */
if rc /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


/*
 * Confirm that the status of the MYUR2 copy pair is one where a
 * DeltaResync can be performed.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.MYUR2.) MSG(DEMO_MSG.)",
            "GOTO(SUSPEND) TIMEOUT(10)"

/*
 * Check the return code of YKEWAIT.
 */
```

```
if rc /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


/*
 * Execute a DeltaResync on the MYUR1 copy pair to change
 * the status of MYUR1 to DUPLEX, and to change
 * the status of MYUR2 to HOLD.
 */
address TSO "YKRESYNC STEM(DEMO_INFO.MYUR1.) MSG(DEMO_MSG.)",
            "DELTAJNL"

/*
 * Check the return code of YKRESYNC.
 */
if rc /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


/*
 * Wait for completion of copying from the primary site to
 * the remote site.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.MYUR1.) MSG(DEMO_MSG.)",
            "GOTO(DUPLEX) TIMEOUT(30)"

/*
 * Check the return code of YKEWAIT.
 */
if rc /= 0
then do
    call printErrorMessage
    exit
end
else
    nop


say "#-- END YKDEMO09."
exit


/*
 * printErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
printErrorMessage: procedure expose DEMO_MSG.
    do x = 1 to DEMO_MSG.0
        say "Severity = " || DEMO_MSG.x.Severity
        say "Text     = " || DEMO_MSG.x.Text
        say "Value    = " || DEMO_MSG.x.Value
    end
    return 0
```

YKDEMO10

```
/* REXX                                                               */
/**********************************************************************/
/*                                                                    */
/* All Rights Reserved. Copyright (C) 2009, 2016, Hitachi, Ltd.       */
/*                                                                    */
/**********************************************************************/
/*                                                                    */
/* YKDEMO10 is a sample demonstration script of YKWTOMSG.             */
/* Using YKWTOMSG, a REXX script can pass a string to another script  */
/* through a MCS console.                                             */
/*                                                                    */
/* Summary of the procedure is following steps.                       */
/*    1) Issuing YKQRYDEV to retrieve the volume information.         */
/*    2) Depending on result of YKQRYDEV, either USR000I or USR001E   */
/*       message will be written to MCS console by YKWTOMSG.          */
/*       If the command is terminated successfully, the script writes */
/*       USR000I message with some command device related attributes. */
/*       If the command is terminated abnormally, the script writes   */
/*       USR001E message with return code.                            */
/*                                                                    */
/* To run the script, execute "START YKDEMO1S,DEVN=xxxx" from your    */
/* MCS console. YKDEMO1S is a sample cataloged procedure of BCM.      */
/* "xxxx" is device number of a volume. This value is passed to DEVN  */
/* parameter of YKQRYDEV. Specify the value to fit your environment.  */
/*                                                                    */
/**********************************************************************/
/* Beginning of sample script. */
/**********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,         */
/*       please uncomment the instructions lines below.               */
/**********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

/*
 * Parse DEVN operand of YKDEMO1S cataloged procedure.
 */
parse upper arg "DEVN("op_devn")";

/*
 * Retrieve a volume information in the storage system. DEVN
 * operand is specified a device number of volume for input. STEM
 * operand is specified a variable of volume information for output.
 */
address TSO "YKQRYDEV STEM(DEMO.) DEVN("op_devn") MSG(MSG.)";
retcode = rc;

/*
 * Check the return code of YKQRYDEV.
 */
if retcode /= 0
then do
    /*
     * Found errors during YKQRYDEV. Writing USR001E message with
     * return code of the command to MCS console. Then, terminate
     * the script.
     */
    wtorc = YKWTOMSG("E", "USR001E YKQRYDEV error, rc=" || retcode);
```

```
    exit retcode;
end;
else
    nop;

/*
 * Retrieve volume information successfully. Writing USR000I message
 * with some command device related attributes to MCS console.
 */
wtorc = YKWTOMSG("I", ,
    "USR000I YKQRYDEV rc=0",                    ,
    "  Device is valid? = " || DEMO.CDEV.INFO,   ,
    "  Device status    = " || DEMO.CDEV.STATUS, ,
    "  CDEV's APID      = " || DEMO.CDEV.APID   );

/*
 * Terminate the sample script successfully.
 */
exit 0;
```

YKDEMO1S

```
//YKDEMO1S PROC DEVN=
//*********************************************************************
//*
//* All Rights Reserved. Copyright (C) 2009, 2020, Hitachi, Ltd.
//*
//*********************************************************************
//YKDEMO1S EXEC PGM=IKJEFT01,TIME=1440,REGION=4096K,
//            PARM='YKDEMO10 DEVN(&DEVN)'
//SYSTSPRT DD SYSOUT=*
//SYSTSIN  DD DUMMY
//SYSABEND DD SYSOUT=*
//SYSEXEC  DD DSN=HDSYK.Vnnnnnn.HDSYSAMT,DISP=SHR      Samplib
//         PEND
```

Note: The *nnnnnn* portion of V*nnnnnn* in the sample-cataloged procedure. This differs depending on the version.

YKDEMO11

```
/* REXX                                                              */
/*******************************************************************/
/*                                                                   */
/* All Rights Reserved. Copyright (C) 2010, 2016, Hitachi, Ltd.      */
/*                                                                   */
/*******************************************************************/
/*                                                                   */
/* YKDEMO11 is an example script for setting BCM environment         */
/* variables to local variables and then printing them out.          */
/*                                                                   */
/* Below is a list of local variables that store BCM environment     */
/* variables. The default value for each is "N/A".                   */
/*                                                                   */
/*    Local                                                          */
/*    Variable    Description                                        */
/*    ---------------------------------------------------------------*/
/*    HostID      Host ID                                            */
/*    LicDSN      Prefix of the license information dataset          */
/*    BCMLog      Output method of the BCM log                       */
```

```
/*    CLILog      Output setting for the CLI command-execution logs   */
/*                                                                    */
/*                                                                    */
/**********************************************************************/
/**********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,         */
/*       please uncomment the instructions lines below.               */
/**********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

HostID = "N/A"
LicDSN = "N/A"
BCMLog = "N/A"
CLILog = "N/A"

/* Execute OUTTRAP function on the YKDSPENV-style output. All         */
/* statuses are stored in LINE.                                       */
push_trap = Outtrap()
void      = Outtrap("line.")
Address TSO "YKENV"         /* YKENV indicates YKDSPENV-style output. */
save_retc = rc
void      = Outtrap(push_trap)

/* Parse each line of the LINE array to get the status of the         */
/* environment variables.                                             */
If save_retc = 0 Then
  Do i = 1 To line.0
    Parse Var line.i text ':' value .
    Select
      When text == 'Host ID'                 Then  HostID = value
      When text == 'License info DSN prefix' Then  LicDSN = value
      When text == 'BCM log output method'   Then  BCMLog = value
      When text == 'CLI log output settings' Then  CLILog = value
      Otherwise Nop
    End
  End
Else
  Nop

/* Finally, print all variables.                                      */
Say '1) Host ID                  = ' HostID
Say '2) License info DSN prefix  = ' LicDSN
Say '3) BCM log output method    = ' BCMLog
Say '4) CLI log output settings  = ' CLILog

Exit save_retc
```

YKDEMO12

```
/* REXX                                                               */
/**********************************************************************/
/*                                                                    */
/* All Rights Reserved. Copyright (C) 2011, 2017, Hitachi, Ltd.       */
/*                                                                    */
/**********************************************************************/
/*                                                                    */
/* YKDEMO12 is an example script that demonstrates recovery of TC     */
```

```
/* pairs that became inconsistent because of interrupted FlashCopy    */
/* copy process. This script discovers CONSLOST copy pairs in the TC  */
/* group, deletes them, and then re-creates them.                     */
/*                                                                    */
/*    This sample script assumes the following settings.              */
/*                                                                    */
/*    1) The definition files are stored in the dataset with the      */
/*       prefix "BCM.DEMO".                                           */
/*    2) TC-Sync copy group is used. The copy group ID is "MYTCS".    */
/*    3) The route list ID is "DEMORLST".                             */
/*    4) The primary Device Address Domain ID is "PRIM".              */
/*                                                                    */
/*    The details for this sample script are as follows:              */
/*                                                                    */
/*    1) Call YKLOAD to load a configuration definitions.             */
/*    2) Check whether TC pair became inconsistent because of         */
/*       interrupted FlashCopy copy process, or not.                  */
/*    *) When TC pair became inconsistent because of interrupted      */
/*       FlashCopy copy process, go to step 3.                        */
/*    3) Check the status of each pairs.                              */
/*    *) When the status is CONSLOST, go to step 4 and 5.             */
/*    4) Delete the pair of which the status is CONSLOST in MYTCS.    */
/*    5) Re-make the deleted pair again.                              */
/*                                                                    */
/**********************************************************************/
/* Sample script begins. */
/**********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,         */
/*       please uncomment the instructions lines below.               */
/**********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

Say "#-- BEGIN YKDEMO12."
/*
 * If you want to issue all commands via command devices,
 * please uncomment the VIACDEV parameter.
 */
Call "YKLOAD" "STEM(DEMO_INFO.) PREFIX(BCM.DEMO) GROUP(MYTCS)",
              "DAD(PRIM) MSG(DEMO_MSG.)",
              "ROUTE(DEMORLST)" /* "VIACDEV" */ ;

/*
 * Check the return code of YKLOAD.
 */
If result /= 0 Then
  Do
    Call PrintErrorMessage
    Exit
  End
Else
  Nop

/*
 * Check the status of the MYTCS copy pair
 * to find that TC pair became inconsistent because of interrupted
 * FlashCopy copy process.
 */
Address TSO "YKQUERY STEM(DEMO_INFO.) MSG(DEMO_MSG.)"

/*
 * Check the return code of YKQUERY.
```

```
 */
If rc > 8 Then
  Do
    Call PrintErrorMessage
    Exit
  End
Else
  Nop

/*
 * When TC pair became inconsistent because of interrupted FlashCopy
 * copy process, check the status of each the MYTCS copy pairs.
 * If the status of pair is CONSLOST, execute recovering process.
 */
If DEMO_INFO.CopyGroup.1.ConslostCt > 0 Then
  Do
    Do i = 1 To DEMO_INFO.CopyGroup.1.Pair.0
      If DEMO_INFO.CopyGroup.1.Pair.i.State == "CONSLOST" Then
        Do
          /*
           * Delete the CONSLOST pair in MYTCS.
           */
          P_DEVN = DEMO_INFO.CopyGroup.1.Pair.i.Pri.Devn
          S_DEVN = DEMO_INFO.CopyGroup.1.Pair.i.Sec.Devn
          Address TSO "YKDELETE STEM(DEMO_INFO.) MSG(DEMO_MSG.)",
                      "DEVN("P_DEVN","S_DEVN")"

          /*
           * Check the return code of YKDELETE.
           */
          If rc /= 0 Then
            Do
              Call PrintErrorMessage
              Exit
            End
          Else
            Nop

          /*
           * Confirm that the status of the deleted pair is one where
           * the copy pair can be copied.
           */
          Address TSO "YKEWAIT STEM(DEMO_INFO.) MSG(DEMO_MSG.)",
                      "GOTO(SIMPLEX) TIMEOUT(1) NOINVALIDCHECK",
                      "DEVN("P_DEVN","S_DEVN")"

          /*
           * Check the return code of YKEWAIT.
           */
          If rc /= 0 Then
            Do
              Call PrintErrorMessage
              Exit
            End
          Else
            Nop

          /*
           * Re-make the deleted pair in MYTCS.
           */
          Address TSO "YKMAKE STEM(DEMO_INFO.) MSG(DEMO_MSG.)",
                      "DEVN("P_DEVN","S_DEVN")"

          /*
           * Check the return code of YKMAKE.
           */
          If rc /= 0 Then
            Do
              Call PrintErrorMessage
```

```
              Exit
            End
          Else
            Nop

          /*
           * Confirm that the re-maked pair has been recovered.
           */
          Address TSO "YKEWAIT STEM(DEMO_INFO.) MSG(DEMO_MSG.)",
                      "GOTO(DUPLEX) TIMEOUT(10)",
                      "DEVN("P_DEVN","S_DEVN")"

          /*
           * Check the return code of YKEWAIT.
           */
          If rc /= 0 Then
            Do
              Call PrintErrorMessage
              Exit
            End
          Else
            Nop
        End
      Else
        Nop
    End
  End
Else
  Nop

Say "#-- END YKDEMO12."
Exit

/*
 * PrintErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
PrintErrorMessage: procedure expose DEMO_MSG.
Do x = 1 To DEMO_MSG.0
  Say "Severity = " || DEMO_MSG.x.Severity
  Say "Text     = " || DEMO_MSG.x.Text
  Say "Value    = " || DEMO_MSG.x.Value
End
Return 0
```

YKDEMO13

```
/* REXX                                                              */
/*******************************************************************/
/*                                                                   */
/* All Rights Reserved. Copyright (C) 2012, 2017, Hitachi, Ltd.      */
/*                                                                   */
/*******************************************************************/
/*                                                                   */
/* YKDEMO13 - A demo script of Business Continuity Manager REXX CLI  */
/*    commands used for obtaining EXCTG information.                 */
/*                                                                   */
/*    This sample script uses the following CLI commands.            */
/*       - YKLOAD                                                    */
/*       - YKEWAIT                                                   */
/*       - YKQEXCTG                                                  */
/*       - YKSLEEP                                                   */
/*                                                                   */
/*    This sample script assumes the following settings.             */
/*                                                                   */
```

```
/*    1) The definition files are stored in the dataset with the      */
/*       prefix "BCM.DEMO".                                           */
/*    2) UR 4X4 copy group container is used. The copy group ID is    */
/*       "MYUR4X4".                                                   */
/*    3) The route list ID is "DEMORLST".                             */
/*    4) The primary Device Address Domain ID is "PRIM".              */
/*                                                                    */
/**********************************************************************/
/* Sample script begins. */
/**********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,         */
/*       please uncomment the instructions lines below.               */
/**********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

say "#-- BEGIN YKDEMO13.";
address TSO "YKENV"

/*
 * YKLOAD should be called before manipulating MYUR4X4 to make
 * definition information of MYUR4X4 available on the REXX environment.
 * If you want to issue all commands via command devices,
 * please uncomment the VIACDEV parameter.
 */
call "YKLOAD" "STEM(DEMO_INFO.) PREFIX(BCM.DEMO) GROUP(MYUR4X4)",
              "DAD(PRIM) MSG(DEMO_MSG.)",
              "ROUTE(DEMORLST)" /* "VIACDEV" */ ;

/*
 * Check the return code of YKLOAD to see if it is 0 or not.
 */
if result /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Call YKQUERY to refresh the information in the Copy Group structure
 * of MYUR4X4 copy group container before calling YKMAKE. You may use
 * YKEWAIT with TIMEOUT(0) parameter instead, as demonstrated in
 * YKDEMO01.
 */
address TSO "YKQUERY STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is bigger than 8.
 */
if rc > 8
then do
    call printErrorMessage;
    exit;
end;
else
    nop;

/*
 * Establish all copy pairs in MYUR4X4 copy group container into DUPLEX.
 * This is for demonstration purpose only. In reality you may already
```

```
 * have a copy group up and running.
 */
address TSO "YKMAKE STEM(DEMO_INFO.) MSG(DEMO_MSG.) SELECT(COND)";

/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Use YKEWAIT to wait until "MYUR4X4" is fully established.
 * The value for TIMEOUT is arbitrary. In this example, 30 minutes is
 * used just for instance.
 */
address TSO "YKEWAIT STEM(DEMO_INFO.) MSG(DEMO_MSG.) GOTO(DUPLEX)",
            "TIMEOUT(30)";


/*
 * Check the return code to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Several copy group information items obtained by the YKLOAD command
 * are displayed here.
 */
say "Copy Group ID : " ||,
    DEMO_INFO.ID;
say "Description   : " ||,
    DEMO_INFO.Description;


outFlag = "INLOOP";

do i = 1 to 10 while (outFlag == "INLOOP")

    /*
     * Calls the YKQEXCTG command to obtain the EXCTG information for
     * MYUR4X4. If the copy direction is the reverse direction, specify
     * the TO(PRIMARY) parameter.
     */
    address TSO "YKQEXCTG STEM(DEMO_INFO.) MSG(DEMO_MSG.)",
                "TO(SECONDARY)";

    /* Check the return code of YKQEXCTG to see if it is 0 or not.    */
    if rc /= 0
    then do
        call printErrorMessage;
        exit;
    end;
    else
        nop;

    if DEMO_INFO.Exctg2.Info == "Valid"
```

```
    then do
        /*
         * Several information items obtained by the YKQEXCTG command
         * are displayed here. For details about the information items
         * that the YKQEXCTG command can obtain, see the Business
         * Continuity Manager Reference Guide.
         */
        say "YKQEXCTG End Time      : " ||,
            DEMO_INFO.Exctg2.EndTime;
        say "EXCTG Consistency Time : " ||,
            DEMO_INFO.Exctg2.ArbCTTime;
        say "EXCTG CTDelta          : " ||,
            DEMO_INFO.Exctg2.ArbCTDelta;

        /* Wait for 10 second and re-enter the loop for YKQEXCTG.     */
        address TSO "YKSLEEP SEC(10)";

        if rc /= 0
        then do
            call printErrorMessage;
            exit;
        end;
        else
            nop;
    end;
    else do
        say "Exctg2 REXX structure is not valid."
        outFlag = "OUTLOOP";
    end;

end;


say "#-- END YKDEMO13.";
exit;


/*
 * printErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
printErrorMessage: procedure expose DEMO_MSG.
    do x = 1 to DEMO_MSG.0
        say "Severity = " || DEMO_MSG.x.Severity;
        say "Text     = " || DEMO_MSG.x.Text;
        say "Value    = " || DEMO_MSG.x.Value;
    end;
    return 0;
```

YKDEMO14

```
/* REXX                                                               */
/**********************************************************************/
/*                                                                    */
/* All Rights Reserved. Copyright (C) 2016, 2018, Hitachi, Ltd.       */
/*                                                                    */
/**********************************************************************/
/*                                                                    */
/* YKDEMO14 - A sample demonstration script that                      */
/*            displays information in the DSK configuration dataset.  */
/*                                                                    */
/*    This sample script uses the following CLI commands.             */
/*       - YKGETHDA                                                   */
/*                                                                    */
/*    This sample script assumes the following settings.              */
```

```
/*    1) DSK configuration dataset is already created.                */
/*    2) DSK configuration dataset is allocated to ddname YKDSKDD.    */
/*                                                                    */
/**********************************************************************/
/* Sample script begins. */
SAY "#-- BEGIN YKDEMO14.";

/*
 * Get dataset name of ddname YKDSKDD.
 */
fc = LISTDSI("YKDSKDD" "FILE");
IF fc > 4 THEN DO
  SAY 'DD(YKDSKDD) is not allocated or invalid.';
  EXIT 8;
END;

/*
 * Get prefix and serialNum from dataset name.
 */
PARSE VAR sysdsname val_prefix'.DSK.SN'val_SN'.'val_dadid;

/*
 * Read DSK configuration file and set volume information
 * to REXX variables.
 */
CALL YKGETHDA "STEM(DEMO_STEM.) PREFIX("val_prefix") SN("val_SN")",
              "DAD("val_dadid") MSG(DEMO_MSG.)";

/*
 * Check the return code to see if it is 0 or not.
 */
IF RESULT /= 0 THEN DO
  CALL printErrorMessage "YKGETHDA" RESULT;
  EXIT 8;
END;

/*
 * Display values in the DSK configuration file.
 */
DO k = 1 to HCC.HDA.0;
  val_SN = HCC.HDA.k.SerialNum;
  sym_SN = 'SN'||val_SN;

  /* Display storage system information. */
  SAY '';
  SAY 'DKC';
  SAY '  SN:'       ||DEMO_STEM.val_dadid.sym_SN.SerialNum||,
      ',Model:'     ||DEMO_STEM.val_dadid.sym_SN.Model||,
      ',Microcode:' ||DEMO_STEM.val_dadid.sym_SN.Microcode||,
      ',IFType:'    ||DEMO_STEM.val_dadid.sym_SN.IFType;

  IF DEMO_STEM.val_dadid.sym_SN.Key.TC = 1 THEN
    val_TC  = 'Y';
  ELSE
    val_TC  = 'N';
  IF DEMO_STEM.val_dadid.sym_SN.Key.TCA = 1 THEN
    val_TCA = 'Y';
  ELSE
    val_TCA = 'N';
  IF DEMO_STEM.val_dadid.sym_SN.Key.SI = 1 THEN
    val_SI  = 'Y';
  ELSE
    val_SI  = 'N';
  IF DEMO_STEM.val_dadid.sym_SN.Key.UR = 1 THEN
    val_UR  = 'Y';
  ELSE
    val_UR  = 'N';

  SAY '  Software Keys:'||,
```

```
      'TC(' ||val_TC|| ')'||'TCA(' ||val_TCA|| ')'||,
      'SI(' ||val_SI|| ')'||'UR('  ||val_UR||  ')';

  SAY '';
  SAY 'Volumes';
  SAY '   Devn,Volser,CU,SSID,CCA, Cylinders,Ext';

  /* Find first cu from CUMap. */
  val_CUMap = VALUE("HCC.HDA."||k||".CUMap");
  pos_CU    = POS('1', val_CUMap, 1);

  DO WHILE(pos_CU /= 0);
    hex_CU = D2X(pos_CU-1, 2);
    sym_CU = 'CU'||hex_CU;

    /* Find first CCA from CCAMap. */
    val_CCAMap = VALUE("HCC.HDA."||k||"."||sym_CU||".CCAMAP");
    pos_CCA    = POS('1', val_CCAMap, 1);

    DO WHILE(pos_CCA /= 0);
      hex_CCA = D2X(pos_CCA-1, 2);
      sym_CCA = 'CCA'||hex_CCA;

      /*
       * Get information values about the volume
       * from DSK structure REXX variables.
       */
      val_devn     = DEMO_STEM.val_dadid.sym_SN.sym_CU.sym_CCA.Devn;
      val_schset   = DEMO_STEM.val_dadid.sym_SN.sym_CU.sym_CCA.Schset
      IF DATATYPE(val_schset, 'X') /= 1 THEN DO
        IF val_devn == '' THEN
          val_schset = ' '
        ELSE
          val_schset = '0'
      END
      ELSE NOP
      val_Volser   = DEMO_STEM.val_dadid.sym_SN.sym_CU.sym_CCA.Volser;
      val_SSID     = DEMO_STEM.val_dadid.sym_SN.sym_CU.sym_CCA.SSID;
      val_Cyls     = DEMO_STEM.val_dadid.sym_SN.sym_CU.sym_CCA.Cyls;
      val_External = DEMO_STEM.val_dadid.sym_SN.sym_CU.sym_CCA.External;

      /* Display volume information. */
      SAY '  'val_schset||RIGHT(val_devn, 4)||,
          ','LEFT(val_Volser, 6)','hex_CU||,
          ','val_SSID','RIGHT(hex_CCA, 3)','RIGHT(val_Cyls, 10)||,
          ','RIGHT(val_External, 3);

      /* Find next CCA from CCAMap. */
      pos_CCA = POS('1', val_CCAMap, pos_CCA+1);
    END;
    /* Find next CU from CUMap. */
    pos_CU = POS('1', val_CUMap, pos_CU+1);
  END;
END;

SAY "#-- END YKDEMO14."; /* The sample script completed. */
EXIT 0;

/*
 * printErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
printErrorMessage: procedure expose DEMO_MSG.
  ARG cli_name cli_result;
  SAY "Command name=" || cli_name || ",result=" || cli_result;
  IF DATATYPE(DEMO_MSG.0) = 'NUM' THEN
  DO x = 1 to DEMO_MSG.0;
    SAY "Severity = " || DEMO_MSG.x.Severity;
    SAY "Text     = " || DEMO_MSG.x.Text;
```

```
    SAY "Value    = " || DEMO_MSG.x.Value;
  END;
  RETURN 0;
```

YKDEMO15

```
/* REXX                                                              */
/*******************************************************************/
/*                                                                   */
/* All Rights Reserved. Copyright (C) 2016, Hitachi, Ltd.            */
/*                                                                   */
/*******************************************************************/
/*                                                                   */
/* YKDEMO15 - A sample demonstration script of YKWTOR.               */
/*                                                                   */
/*    This sample script uses the following CLI commands.            */
/*       - YKWTOR                                                    */
/*                                                                   */
/*******************************************************************/
/* Sample script begins. */
SAY "#-- BEGIN YKDEMO15.";

/*
 * Outputs the specified message text to the console and then waits for
 * a reply from the operator.
 */
WTORRC = YKWTOR("DEMO_REPLY","REPLY Y OR N.");

IF DEMO_REPLY = "Y" THEN DO
  /*
   * Specify the processing to be performed when the reply is "Y".
   */
END;
ELSE IF DEMO_REPLY = "N" THEN DO
  /*
   * Specify the processing to be performed when the reply is "N".
   */
END;
ELSE DO
  /*
   * Specify the processing to be performed in cases other than the
   * above.
   */
END;

SAY "#-- END YKDEMO15."; /* The sample script completed. */
EXIT 0;
```

YKDEMO16

```
/* REXX                                                              */
/*******************************************************************/
/*                                                                   */
/* All Rights Reserved. Copyright (C) 2017, Hitachi, Ltd.            */
/*                                                                   */
/*******************************************************************/
/*                                                                   */
/* YKDEMO16 - A demo script of Business Continuity Manager REXX CLI  */
/*    commands is used to delete all journal groups of copy group    */
/*    container with EXCTG ID specified. After delete is performed   */
/*    by executing the YKDEXCTG command, this demo script confirms   */
```

```
/*    whether all journal groups of copy group container with EXCTG   */
/*    ID were deleted.                                                 */
/*                                                                     */
/*    This sample script uses the following CLI commands.              */
/*       - YKLOAD                                                      */
/*       - YKDEXCTG                                                    */
/*       - YKQUERY                                                     */
/*       - YKSLEEP                                                     */
/*                                                                     */
/*    This sample script assumes the following settings.               */
/*                                                                     */
/*    1) The definition files are stored in the dataset with the       */
/*       prefix "BCM.DEMO".                                            */
/*    2) Copy group container with EXCTG ID specified is used.         */
/*       The copy group ID is "MYUREXC".                               */
/*    3) The route list ID is "DEMORLST".                              */
/*    4) The primary Device Address Domain ID is "PRIM".               */
/*                                                                     */
/***********************************************************************/
/* Sample script begins. */
/***********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,          */
/*       please uncomment the instructions lines below.                */
/***********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do;
 *     SAY 'TSO service is not available.'
 *     EXIT -3;
 *   End;
 * Else
 *   Nop;
 */

say "#-- BEGIN YKDEMO16.";
address TSO "YKENV"

/*
 * YKLOAD should be called before performing MYUREXC to make
 * definition information of MYUREXC available on the REXX environment.
 * If you want to issue all commands via command devices,
 * please uncomment the VIACDEV parameter.
 */
call "YKLOAD" "STEM(DEMO_INFO.) PREFIX(BCM.DEMO) GROUP(MYUREXC)",
              "DAD(PRIM) MSG(DEMO_MSG.)",
              "ROUTE(DEMORLST)" /* "VIACDEV" */ ;

/*
 * Check the return code of YKLOAD to see if it is 0 or not.
 */
if result /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * YKQUERY should be called before calling the YKDEXCTG command
 * to confirm the state of MYUREXC.
*/
address TSO "YKQUERY STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * Check the return code of YKQUERY to see if it is bigger than 8.
 */
if rc > 8
```

```
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * Calls the YKDEXCTG command to delete all journal groups of copy
 * group container with EXCTG ID specified.
 */
address TSO "YKDEXCTG STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

/*
 * Check the return code of YKDEXCTG to see if it is 0 or not.
 */
if rc /= 0
then do
    call printErrorMessage;
    exit;
end;
else
    nop;


/*
 * The following piece of code attempts to detect completion of the
 * deletion process for all journal groups of copy group container with
 * EXCTG ID specified by using YKQUERY. If the deletion process is not
 * yet complete and the value of "JNLGVALID" remains non-null, the
 * system waits for a certain amount of time
 * (in this example, 1 second) and tries again to detect completion
 * of the deletion process.
 * This cycle will occur 10 times or until completion of the deletion
 * process is detected.
 */
outFlag = "INLOOP";
do i = 1 to 10 while (outFlag == "INLOOP")

    /*
     * Call YKQUERY to refresh the information in the Copy group
     * structure of the MYUREXC copy group.
     */
    address TSO "YKQUERY STEM(DEMO_INFO.) MSG(DEMO_MSG.)";

    /*
     * Check the return code of YKQUERY to see if it is bigger
     * than 44.
     */
    if rc > 44
    then do
        call printErrorMessage;
        exit;
    end;
    else
        nop;


    /*
     * DEMO_INFO.CopyGroup.j.EXCTG.xxx.JNLGVALID shows the status of
     * the journal group. JNLGVALID = '' means that the journal group
     * was deleted.
     */
    sleepFlag = "OFF";
    do j = 1 to DEMO_INFO.CopyGroup.0
        if (DEMO_INFO.CopyGroup.j.EXCTG.FWD.JNLGVALID /= '') | ,
           (DEMO_INFO.CopyGroup.j.EXCTG.REV.JNLGVALID /= '')
        then do
```

```
            /* Wait for 1 second and re-enter the loop for YKQUERY. */
            address TSO "YKSLEEP SEC(1)";

            sleepFlag = "ON";
            if rc /= 0
            then do
                call printErrorMessage;
                exit;
            end;
            else
                leave;
        end;
        else
            nop;
    end;


    /*
     * Check whether all journal groups were deleted.
     */
    if sleepFlag == "OFF"
    then
        outFlag = "OUTLOOP";
    else
        nop;
end;


if outFlag == "INLOOP"
then
    say "All journal groups were not deleted in time.";
else
    say "All journal groups were deleted.";

say "#-- END YKDEMO16.";
exit;


/*
 * printErrorMessage: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
printErrorMessage: procedure expose DEMO_MSG.
    do x = 1 to DEMO_MSG.0
        say "Severity = " || DEMO_MSG.x.Severity;
        say "Text     = " || DEMO_MSG.x.Text;
        say "Value    = " || DEMO_MSG.x.Value;
    end;
    return 0;
```

YKDEMO17

```
/* REXX                                                               */
/**********************************************************************/
/*                                                                    */
/* All Rights Reserved. Copyright (C) 2017, Hitachi, Ltd.             */
/*                                                                    */
/**********************************************************************/
/*                                                                    */
/* YKDEMO17 - This sample demonstration script illustrates how to     */
/*    use the YKFENCE command to obtain Fence information of          */
/*    a copy group. The sample displays the number of volumes         */
/*    in the Fence state.                                             */
/*                                                                    */
/*    This sample script uses the following CLI commands.             */
```

```
/*       - YKLOAD                                                    */
/*       - YKFENCE                                                   */
/*                                                                   */
/*    This sample script assumes the following settings.             */
/*                                                                   */
/*    1) The definition files are stored in the dataset with the     */
/*       prefix "BCM.DEMO".                                          */
/*    2) TC-Sync copy group is used. The copy group ID is "MYTCS".   */
/*    3) The route list ID is "DEMORLST".                            */
/*    4) The primary Device Address Domain ID is "PRIM".             */
/*                                                                   */
/*********************************************************************/
/* Sample script begins. */
/*********************************************************************/
/* Note: When this sample program is executed in SYSTEM REXX,        */
/*       please uncomment the instructions lines below.              */
/*********************************************************************/
/*
 * If ADDRESS() /= 'TSO' Then
 *   Do
 *     Say 'TSO service is not available.'
 *     Exit -3
 *   End
 * Else
 *   Nop
 */

Say "#-- BEGIN YKDEMO17."
Address 'TSO' "YKENV"

/*
 * YKLOAD should be called before manipulating MYTCS to make definition
 * information of MYTCS available on the REXX environment.
 */
Call "YKLOAD" "STEM(DEMO_INFO.) PREFIX(BCM.DEMO) GROUP(MYTCS)",
              "DAD(PRIM) MSG(DEMO_MSG.)",
              "ROUTE(DEMORLST)"

/*
 * Check the return code of YKLOAD to see if it is 0 or not.
 */
If result /= 0 Then
  Do
    Call ErrorMessages
    Exit 16
  End
Else
  Nop

/*
 * Call YKFENCE to obtain the Fence information of the primary volume
 * in the MYTCS copy group.
 */
Address 'TSO' "YKFENCE STEM(DEMO_INFO.) MSG(DEMO_MSG.)",
              "QUERY TO(PRIMARY)"

/*
 * Check the return code of YKFENCE to see if it is bigger than 4.
 */
If rc > 4 Then
  Do
    Call ErrorMessages
    Exit 16
  End
Else
  Nop

/*
 * From the Fence information obtained by the sample script,
```

```
 * the sample script displays the number of primary volumes
 * in the MYTCS copy group that are in the Soft Fence state
 * or the SPID Fence state.
 */
Say "Copy Group Name :" DEMO_INFO.ID
Say "Fence Status Counts(Primary)"
Say " Soft Fence :" DEMO_INFO.PriSoftFenceCt
Say " SPID Fence :" DEMO_INFO.PriSPIDFenceCt

Say "#-- END YKDEMO17."
Exit 0

/*
 * ErrorMessages: This procedure prints all of the error messages
 *    in the Message structure when a CLI command failed.
 */
ErrorMessages: procedure expose DEMO_MSG.
  Do i = 1 To DEMO_MSG.0
    Say "Severity =" DEMO_MSG.i.Severity
    Say "Text     =" DEMO_MSG.i.Text
    Say "Value    =" DEMO_MSG.i.Value
  End
Return 0
```

B

Method for assigning dummy device numbers by using YKBTSCAN

This section describes the method for assigning dummy device numbers by executing `YKBTSCAN`, and the processing when a dummy device number is already used.

Method for assigning dummy device numbers

The following lists the basic rules for assigning dummy device numbers.

- Dummy device numbers are assigned to newly scanned volumes. No dummy device number is reassigned to an existing volume that is rescanned. However, if the `RENUM` parameter and the `DUMMY` parameter are specified, a dummy device number is reassigned.
- When the first two digits of a dummy device number are counted up for each CU, and the last two digits are counted up for each volume, the dummy device number is recounted up from `00` when the number becomes `FF`.
- If there are no more dummy device numbers available to be assigned, `YKBTSCAN` outputs the `YK7105E` message and terminates with an error.

In this chapter, the following volumes are referred to as "volumes with a dummy device number already assigned":

- The volumes in the existing disk configuration definition file
- The volumes that were previously specified in `SYSIN` (volumes that are already scanned and have a dummy device number assigned)

The following describes how dummy device numbers are assigned, by dividing dummy device numbers into two parts: the first two digits and the last two digits.

Method for assigning the first two digits of a dummy device number

The following method is used to assign the first two digits of a dummy device number:

When there are no volumes that have already been assigned a dummy device number in the CU to which the scanned volume belongs

- The first two digits of the value specified for the `DUMMY` parameter are assigned to the first volume detected by the scan.
- The first two digits are counted up for each CU.

When there is a volume that has already been assigned a dummy device number in the CU to which the scanned volume belongs

- The scanned volume is assigned a dummy device number starting with the same first two digits as the dummy device number that has already been assigned to a volume in the CU.

  If the `RENUM` parameter is specified, the digits are assigned as explained in "When there is a volume that has already been assigned a dummy device number in the CU to which the scanned volume belongs".

Method for assigning the last two digits of a dummy device number

The following method is used to assign the last two digits of a dummy device number:

When CCA is specified for the DUMMY parameter

- The CCA value of the volume is assigned as the last two digits of the dummy device number.

When CCA is not specified for the DUMMY parameter

- The last two digits of the value specified for the DUMMY parameter are assigned to the first volume detected by the scan.
- The last two digits are counted up for each volume, and are recounted from 00 if CU is changed.

Examples of assigning dummy device numbers

The figures below show the relationships between the parameters (SN, RANGE, and DUMMY) entered from SYSIN, the storage addresses (CU and CCA) of the volumes to be scanned, and the dummy device numbers (Dummy Devn) to be assigned.

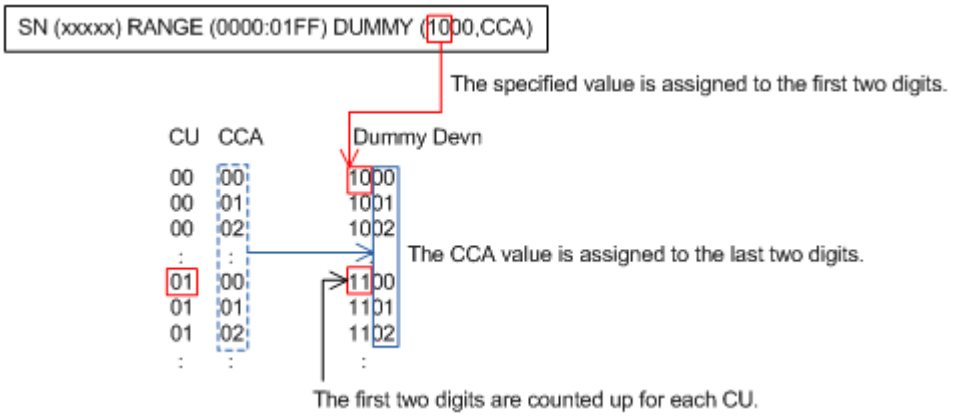


Figure B-1 When CCA is specified and there are no volumes that have already been assigned a dummy device number in the CU to which the scanned volume belongs

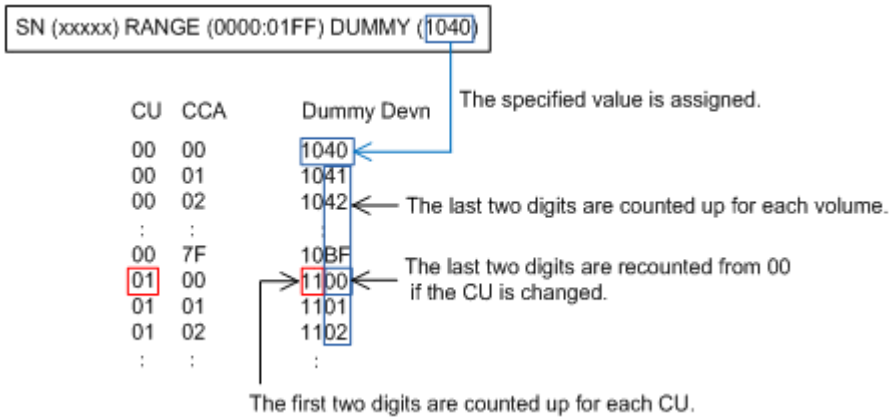


Figure B-2 When CCA is not specified and there are no volumes that have already been assigned a dummy device number in the CU to which the scanned volume belongs

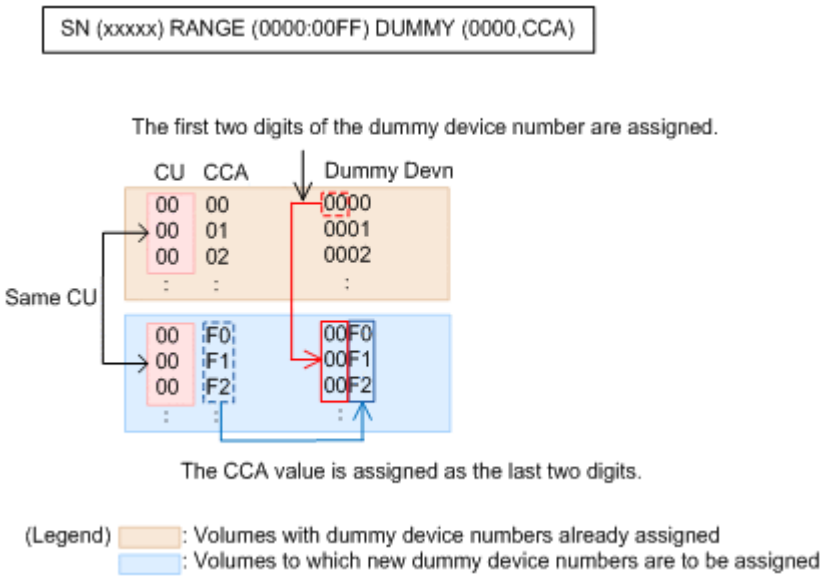


Figure B-3 When CCA is specified and there is a volume that has already been assigned a dummy device number in the CU to which the scanned volume belongs

The processing when the dummy device number is already used

When the dummy device number to be assigned to the volume scanned by YKBTSCAN is already used, the following processing is performed.

- If the scanned volume and the volume with duplicate dummy device number do not belong to the same CU:

  The dummy device number to be assigned is counted up until the number is no longer duplicated.

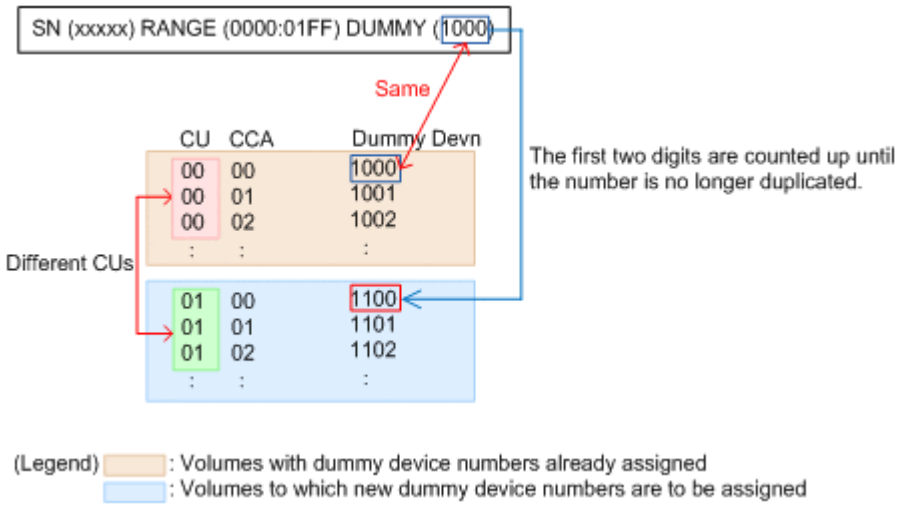


Figure B-4 Increasing the first two digits of a dummy device number

- When the scanned volume and the volume with duplicate dummy device number belong to the same CU:

  The last two digits of the dummy device number to be assigned are counted up until the number is no longer duplicated.

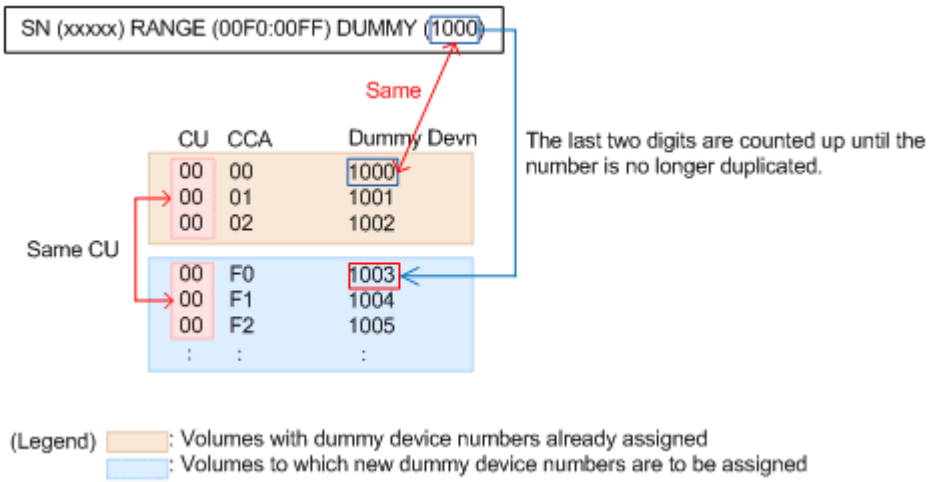


Figure B-5 Increasing the last two digits of the dummy device number

Note: If the dummy device numbers are duplicated in either of the following situations, `YKBTSCAN` outputs the `YK7103E` message, the `YK7108E` message, the `YK7104E` message, or the `YK7109E` message, and then terminates with an error:

- When the `RENUM` parameter and the `DUMMY` parameter are specified
- When `CCA` is specified for the `DUMMY` parameter, and the scanned volume and the volume with duplicate dummy device number belong to the same CU

C

Example of the scan results of PPRC copy pairs

This appendix provides an example of the scan results of PPRC copy pairs.

Example of the scan results of PPRC copy pairs

If you press the **Enter** key in the Scan Copy Pair Inside Storage System panel, volumes of PPRC copy pairs are scanned, and the copy pair configuration information are stored in the copy group definition file.

An example of job log data that is output as a result of scanning PPRC copy pairs follows:

```
1                       J E S 2  J O B  L O G  --  S Y S T E M  L P A 1  --  N O D E  N 1
0
 16.19.32 JOB00213 ---- FRIDAY,    13 FEB 2015 ----
 16.19.32 JOB00213  IRR010I  USERID USERID  IS ASSIGNED TO THIS JOB.
 16.19.32 JOB00213  ICH70001I USERID  LAST ACCESS AT 16:16:38 ON FRIDAY, FEBRUARY 13, 2015
 16.19.32 JOB00213  $HASP373 USERIDA STARTED - INIT S1   - CLASS S - SYS LPA1
 16.19.32 JOB00213  IEF403I USERIDA - STARTED - TIME=16.19.32
 16.19.34 JOB00213  USERIDA.GO      #01 (IKJEFT01) STEP-ENDED CC=0000
 16.19.34 JOB00213  IEF404I USERIDA - ENDED - TIME=16.19.34
 16.19.34 JOB00213  $HASP395 USERIDA ENDED
0------ JES2 JOB STATISTICS ------
-  13 FEB 2015 JOB EXECUTION DATE
-           15 CARDS READ
-          114 SYSOUT PRINT RECORDS
-            0 SYSOUT PUNCH RECORDS
-            6 SYSOUT SPOOL KBYTES
-         0.03 MINUTES EXECUTION TIME
         1 //USERIDA JOB CLASS=S,MSGCLASS=X,NOTIFY=USERID                        JOB00213
           //*
           //*
           IEFC653I SUBSTITUTION JCL - CLASS=S,MSGCLASS=X,NOTIFY=USERID
         2 //S1 EXEC PROC=YKWPROC
         3 XXYKWPROC  PROC
           XX*********************************************************************
           XX*
           XX* All Rights Reserved. Copyright (C) 2003, 2015, Hitachi, Ltd.
           XX*
           XX*********************************************************************
           XX*
           XX* Modify the STEPLIB and SYSEXEC DD statements to suit your
           XX* naming standards. Then place this into a user PROCLIB which
           XX* can be used for background JOB submission invoked via
           XX* ISPF Panel operations.
           XX*
         4 XXGO EXEC PGM=IKJEFT01,REGION=0M
         5 XXSTEPLIB  DD DISP=SHR,DSN=HDSYK.Vnnnnn.HDSYLNKT
         6 XXSYSEXEC  DD DISP=SHR,DSN=HDSYK.Vnnnnn.HDSYEXET
         7 XXSYSPRINT DD SYSOUT=*
         8 XXSYSTSPRT DD SYSOUT=*
         9 XXSYSTSIN  DD DUMMY
        10 XXYKLOG01  DD DUMMY
        11 XXYKLOG02  DD DUMMY
        12 XX         PEND
READY
YKP2B PREFIX(YUKON.BCM.PREFX) DEVN(7300,7315) DAD(PRIDAD,SECDAD,NGDAD) CGNAME1(MYTCS)
CGNAME2(MYTCA) CGNAME3(MYSI) HS(NOCHECK)   ...(1)
YKB001I YKP2B completed. RC=return-code    ...(2)
READY
END
```

(1)

Underlined values are those specified for each item in the Scan Copy Pair Inside Storage System panel. The following shows the corresponding relationhips between the items in the Scan Copy Pair Inside Storage System panel and the parameters:

`DEVN`(**Device Num Start**,**Device Num End**)

`DAD`(**Primary**,**Secondary**,**SI Pair (S-VOL) Non Gen'ed**)

`CGNAME1`(**TC Copy Group ID**)

`CGNAME3`(**SI Copy Group ID**)

`HS`(**HS**)

(2)

The scan results of PPRC copy pairs are displayed. If a value of `RC` other than `0`, see the messages that were output before the `YKB001I` message for details.

D

Conventions in syntax explanations

This section describes the conventions in syntax explanations and the syntax elements that are used.

Conventions in syntax explanations

The following table shows the conventions used in syntax explanations.

Table D-1 Conventions in syntax explanations

Example font or symbol	Convention
`|` (stroke)	Indicates delimiters between multiple items and represents the word "or". Example: "`A|B|C`" means "A, B, or C".
`[ ]`	Items enclosed by these brackets can be omitted. If multiple items are described, all the items are omitted or only one of them is selected. Example: `[A]` means either "specify nothing" or "specify A".
`{ }` (curly brackets)	One of items must be selected from among the multiple items enclosed by these brackets. Delimiters between items are indicated as `|`. Example: `{A|B|C}` means you must specify A, B, or C.
. . . (dotted line)	The item indicated immediately before this symbol can be repeated and specified multiple times. Example: "`A, ...`" means you can specify the items after A as many times as necessary.
Italics	This indicates that the item is an optional value specified by the user.
_ (underscore)	Indicates the assumed value for the system when the items enclosed in the selection symbol are omitted.
△	Indicates exactly one space character.
△*n*	Indicates *n* or more space characters.
~	This indicates that the item before this symbol should be described according to the syntax enclosed by `< >`, `<< >>`, or `(( ))` following this symbol.
`< >`	Indicates a syntax element that must be used when specifying the item.
`<< >>`	Indicates a default value used by the system if the item is omitted.
`(( ))`	Indicates the range of values that can be specified.

The following table shows the syntax elements that are used.

Table D-2 Syntax elements

Syntax element	Valid value	Example
numeric characters	`0|1|2|3|4|5|6|7|8|9`	--
alphabetic characters	`A|B|C|D|E|F|G|H|I|J|K|L|M|N|O|P|Q|R|S|T|U|V|W|X|Y|Z|` `a|b|c|d|e|f|g|h|i|j|k|l|m|n|o|p|q|r|s|t|u|v|w|x|y|z`	--
alphanumeric characters	*alphabetic-characters* and *numeric-characters*	`A123`
hexadecimal number	`0|1|2|3|4|5|6|7|8|9|A|B|C|D|E|F`	--
symbolic name	A string of 8 or fewer uppercase alphanumeric characters and numbers beginning with an uppercase alphabetic character	`A1234567`
REXX start symbol	*alphabetic-characters*`|!|?|_|@|#|$`	--
REXX simple symbol	A string consisting of REXX start symbols or numeric characters. The first character must be a REXX start symbol. This string is not case sensitive.	`A?`
REXX prefix	A string consisting of one or more parts, joined by periods (`.`). The last character must be a period (`.`). Each part consists of REXX start symbols or numeric characters. The first character must be a REXX start symbol.	`A?.A123.!12.`
REXX variable name string	A string consisting of one or more parts, joined by periods (`.`), or REXX simple symbol. Each part consists of REXX start symbols or numeric characters. The first character must be a REXX start symbol. This string is not case sensitive.	`A?.A123.!12.A`
DAD string GROUP string PATH string PREFIX string ROUTE string ROUTELABEL string	A string consisting of one or more parts, joined by periods (`.`). Each part consists of uppercase alphabetic characters or numeric characters. The first character of each part must be an uppercase alphabetic character. Each part consists of 1 to 8 characters.	`ABC.DEF`
user ID string	A string consisting of alphanumeric characters. This string must start with an alphabetic character.	`a123`
console name string	A string consisting of alphanumeric characters. This string must start with an alphabetic character.	`a123`

Syntax element	Valid value	Example
command parameter string	A string consisting of one or more parts, joined by spaces. Each part consists of uppercase alphabetic characters, numeric characters, or parentheses (`(` and `)`). The first and last characters of the string must both be a single quotation mark (`'`).	`'AAA B(C)'`
label string	*alphabetic-characters* and *numeric-characters*	`Ab123`
message string	A string consisting of alphanumeric characters, spaces, or parentheses (`(` and `)`). The first and last characters of the string must both be a single quotation mark (`'`).	`'A b'`
storage class string	A string consisting of one to eight alphanumeric characters, at marks (`@`), hash marks (`#`), and dollar signs (`$`).	`A1234567`
volume serial number string	A string consisting of one to six alphanumeric characters, at marks (`@`), hash marks (`#`), dollar signs (`$`), and hyphens (`-`).	`A12345`

device type string	A string consisting of one to eight alphanumeric characters, at marks (`@`), hash marks (`#`), dollar signs (`$`), hyphens (`-`), and forward slashes (`/`). Forward slashes can be used only as the first character of the string.	`SYSDA`
		`3390`
		`/1234`

Acronyms and abbreviations

The following acronyms and abbreviations might be used in this guide.

A

APF
authorized program facility

B

BC Manager
Business Continuity Manager

C

C/T ID
consistency group ID

CCA
command control address

CCW
channel command word

CHA
channel adapter

CLI
command line interface

#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

CSA
common service area

CSB
channel status byte

CU
control unit

D

DAD
device address domain

DASD
direct access storage device

DBCS
double byte character set

Device Manager
Hitachi Device Manager

DEVN
device number

DFSMS
Data Facility Storage Management Subsystem

DKC
disk controller

DLIB
distribution library

DSB
device status byte

DSORG
data set organization

Dynamic Provisioning for Mainframe
Hitachi Dynamic Provisioning Software for Mainframe

E

EXCTG
extended consistency group

G

GTF
generalized trace facility

H

HTTP
HyperText Transfer Protocol

HTTPS
HyperText Transfer Protocol Security

I

IBM® HTTP Server
IBM® HTTP Server for z/OS®

IPL
initial program load

IPv4
Internet Protocol Version 4

IPv6
Internet Protocol Version 6

ISPF
interactive system productivity facility

J

JCL
job control language

#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

L

LDEV
logical device

LPAR
logical partition

LRECL
logical record length

M

M-JNL
master journal

Mainframe Agent
Hitachi Device Manager Mainframe Agent

MAR
mainframe analytics recorder

MCU
main control unit

MIH
missing interrupt handler

P

P-VOL
primary volume

PPRC
peer to peer remote copy

PSW
program status word

R

R-JNL
restore journal

RACF
resource access control facility

RAID
redundant array of independent disks

RCU
remote control unit

RECFM
record format

Replication Manager
Hitachi Replication Manager

REXX
restructured extended executor

ROI
return on investment

RPO
recovery point objective

S

S-VOL
secondary volume

SAF
system authorization facility

SCP
state change pending

SDSF
system display and search facility

ShadowImage
ShadowImage for Mainframe

#	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

SI
ShadowImage for Mainframe

SLA
service level agreement

SM
shared memory

SMF
System Management Facilities

SMP/E
system modification program extended

SMS
Storage Management Subsystem

SSID
storage system ID

SVC
supervisor call

SVP
service processor

SYSMOD
system modification

T

TC
TrueCopy for Mainframe (TrueCopy Synchronous)

Tiered Storage Manager for Mainframe
Hitachi Tiered Storage Manager for Mainframe

TPC-R
IBM® Tivoli® Storage Productivity Center for Replication for System z®

TrueCopy
TrueCopy for Mainframe (TrueCopy Synchronous)

TSE
track space-efficient

TSO/E
Time Sharing Option/Extensions

U

Universal Replicator
Universal Replicator for Mainframe

UR
Universal Replicator for Mainframe

V

VM
virtual machine

VOLSER
volume serial number

VSP 5000 series
A generic name for the following products:
- Hitachi Virtual Storage Platform 5100
- Hitachi Virtual Storage Platform 5200
- Hitachi Virtual Storage Platform 5500
- Hitachi Virtual Storage Platform 5600
- Hitachi Virtual Storage Platform 5100H
- Hitachi Virtual Storage Platform 5200H
- Hitachi Virtual Storage Platform 5500H
- Hitachi Virtual Storage Platform 5600H

VSP 5100
Hitachi Virtual Storage Platform 5100

VSP 5100H
Hitachi Virtual Storage Platform 5100H

VSP 5200
Hitachi Virtual Storage Platform 5200

VSP 5200H
Hitachi Virtual Storage Platform 5200H

VSP 5500
Hitachi Virtual Storage Platform 5500

VSP 5500H
Hitachi Virtual Storage Platform 5500H

VSP 5600
Hitachi Virtual Storage Platform 5600

VSP 5600H
Hitachi Virtual Storage Platform 5600H

VSP F1500
Hitachi Virtual Storage Platform F1500

VSP G1000
Hitachi Virtual Storage Platform G1000

VSP G1500
Hitachi Virtual Storage Platform G1500

X

XML
extensible markup language

XRC
extended remote copy

Z

z/Linux
Linux® on IBM® System z®

Index

D

E

F

H

I

L

M

N

O

P

R

S

U

V

W

X

Y

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